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# Arizona Medicine

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MEDICAL SOCIETY OF THE



UNITED STATES AND MEXICO

Volume 17, Number 3

March, 1960

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(The Editors of the Journal assume no responsibility for opinions expressed in the articles contributed by individual members.)

## Tetracycline Phosphate Complex (TETREX®) in the Therapy of ACUTE PHARYNGITIS, ESPECIALLY WITH LYMPHADENITIS

Ideally, selection of the proper antibiotic for treatment of acute pharyngitis should await the laboratory reports on the susceptibility of the infecting bacteria. But the busy practitioner who sees many patients a day during the upper respiratory infection season may sometimes find it difficult to avoid the empirical choice of an antibiotic. Unfortunately, this practice may sometimes result in therapeutic failure.

No matter what the pressure of the immediate situation, it is worthwhile to consider taking a bacterial specimen from the infected pharynx for culture and sensitivity studies before starting treatment. Thus, a rational basis will be provided for changing the antibiotic should the first choice prove ineffective.

### *Which Antibiotic?*

All other things being equal, the drug of choice is the one to which the pathogen is most susceptible. But if the exigencies of the situation force the physician to a prompt use of antibiotic, a broad-spectrum preparation that produces immediate high blood levels (e.g., tetracycline phosphate complex, TETREX) probably has the best chance of controlling the pathogen.

Later, the laboratory report frequently may indicate that any one of several antibiotic agents would be equally effective against the particular microorganism in question. In such a case other factors such as frequency and severity of side effects, sensitizing potential and toxicity should be considered.

If the acute pharyngitis in question should be due to gram-negative *Klebsiella*<sup>1</sup>, penicillin will be of no value, nor will erythromycin be effective. However, this organism is susceptible to tetracycline. If the pathogen should turn out to be gram-positive *Streptococcus* or *Staphylococcus*, then penicillin, erythromycin, and tetracycline may all be effective against it.

Penicillin, however, in addition to having a limited spectrum, also causes many minor and some serious sensitivity reactions. In a recent survey<sup>2</sup> it was found that penicillin produced severe skin reactions. But most important was the observation that anaphylactic shock, with a

fatality rate of about 9 per cent, was the most frequent serious reaction. Such severe reactions are almost always associated with parenteral administration.

The tetracyclines (e.g., TETREX) have the advantages of a broad range of antimicrobial activity and low toxicity. And in addition, the physician does not have to trouble himself or his patients with repeated blood studies when he prescribes TETREX. Minor reactions such as gastric upsets or mild skin rashes occur occasionally. The most serious side effects are staphylococcal and monilial overgrowth, but these are rare and can be adequately controlled.

### *Some Microorganisms Susceptible<sup>a</sup> to Tetracycline (TETREX)<sup>b</sup>*

*Streptococcus*; *Staphylococcus*; *Pneumococcus*; *Gonococcus*; *Meningococcus*; *C. diphtheriae*; *B. anthracis*; *E. coli*; *Proteus*; *A. aerogenes*; *K. pneumoniae*; *Shigella*; *Brucella*; *P. tularensis*; *H. influenzae*; *T. pallidum*; *Rickettsiae*; *Viruses of psittacosis and ornithosis*, lymphogranuloma inguinale, primary atypical pneumonia; *E. histolytica*; *D. granulomatosis*.

<sup>a</sup>Some strains are not susceptible.

<sup>b</sup>Table adapted from Goodman, L. S., and Gilman, A.: *The Pharmaceutical Basis of Therapeutics*, 2nd edition, New York, The Macmillan Co., 1956, pp. 1322-1323.

High blood, body fluid, and tissue levels of active drug are quickly attained when the new phosphate preparation of tetracycline (TETREX) is used.

The semisynthetic tetracyclines have been in constant use since they were introduced in 1952. They have been proved clinically and have established themselves as safe, effective, and valuable antibiotic agents. But the final decision, the choice of agent, and the control of therapy must remain where it has always been, in the hands of the individual physician.

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# Original Articles

## ARIZONA MEDICINE

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MARCH, 1960

### The Hyperventilation Syndrome\*

Haddon M. Carryer, M.D.

Section of Medicine  
Mayo Clinic and Mayo Foundation†  
Rochester, Minnesota

THE hyperventilation syndrome is one of the conditions a physician may encounter most frequently; and yet it is not commonly recognized. Everyone hyperventilates at times, either from overstimulation of the respiratory center associated with mental excitation or from reflexes initiated by pain, heat, or cold. From these more normal responses of normal persons, the incidence of the hyperventilation syndrome increases through the ranks of stable subjects living under a temporary strain, such as combat soldiers, to those individuals who usually tolerate stresses poorly. The less stable group includes a variety of inadequate and psychoneurotic patients who are a significant part of any medical practice.

The incidence of hyperventilation might be considered low and its clinical significance unimportant, if one judged by the scant attention given to it in medical literature. Actually, however, the incidence is high. Estimates have been made that it occurs in from 5 to 10 per cent of patients who visit the office of a general practitioner. (1, 2) The incidence of hyperventi-

lation syndrome among women is said to be three times greater than among men. (3) The respiratory alkalosis that overbreathing induces is the basis for many symptoms we loosely refer to as "functional." If we physicians stop with this diagnosis, not pursuing the mechanism by which symptoms occur, we fail to perform a useful service. A demonstration of the mechanism through which symptoms have come about can add noticeably to the satisfaction of our patients.

The hyperventilation syndrome occurs when an increased rate or depth of respiration brings about a lowering in the level of alveolar carbon dioxide. This reduction in carbon dioxide in turn sets off a train of transitory chemical changes that result in widespread symptoms.

The association of hyperventilation with emotional disorders and its effects upon the human body have been referred to in historical records for centuries. Early French hypnotists utilized hyperventilation to induce so-called hysterical seizures. In long past naval days sailors undergoing flogging would hyperventilate to hasten the unconsciousness that terminated the punishment. (4) Sighing often has occurred with emo-

\*Read at the meeting of the Arizona Medical Association, Chandler, Arizona, April 28 to May 2, 1959.

†The Mayo Foundation, Rochester, Minnesota, is a part of the Graduate School of the University of Minnesota.

tional stress, as so excellently described by DuLaurens in 1559.(5)

"Melancholoke folke are commonly giuen to sigh, because the minde being possessed with great varietie and store of foolish apparitions, doth not remember or suffer the partie to be at leisure to breathe according to the necessitie of nature, whereupon she is constrained at once to sup vp as much ayre, as otherwise would sruue for two or three time; and this great draught of breath is called by name sighing, which as it were a reduplicating of the ordinary manner of breathing. In this order it falleth out with louers, and all those which are very busily occupied in some deep contemplation. Sillie fooles likewise which fall into wonder at the sight of any beautifull and goodly picture, are constrained to giue a great sigh, their will (which is the efficient cause of breathing) being altogether distracted, and wholly possessed with the sight of the image."

Hyperventilation may result from organic brain damage, usually as a sequel to encephalitis. This form of the disorder is relatively uncommon and is not one I wish to discuss today. Another type of hyperventilation occurs in persons exposed to cold, which stimulates the respiratory center. Also hyperventilation may occur in persons unadapted to rarefied atmosphere, who overbreathe in an attempt to obtain adequate oxygen at such low atmospheric pressures. An excessive loss of carbon dioxide occurs as such subjects endeavor to get sufficient oxygen. Hyperventilation may occur when a repetitious physical activity imposes a mechanized regulation upon the respiratory effort. For example, it occurs in the inexperienced swimmer who gasps each time his swimming stroke permits an inhalation. It occurs also in the patient with a coughing paroxysm as he repeatedly gasps quantities of air and in so doing brings on respiratory alkalosis. We all have observed the patient who after several deep breaths in the course of a physical examination comments that he is lightheaded.

I should like to consider the more common forms of hyperventilation occurring in persons with no organic disease as a contributing factor. Hyperventilation may occur as a repeated sighing and yawning, particularly in an excessively anxious person. It may occur as a panting type of acute respiratory distress among apprehensive patients who suspect that something dire is

happening. This form of hyperventilation causes many symptoms of an acute anxiety attack. Of greatest significance is that form of chronic hyperventilation occurring in persons who perhaps fail to recognize that they breathe more rapidly or more deeply or sigh more frequently than is normal. Such accelerated respiratory activity goes unrecognized by many in whom it is present.

#### *Mechanism of the Syndrome*

Whatever the process by which the exchange of air in the lung may be accelerated in the hyperventilation syndrome, the net result is a loss of carbon dioxide from the alveoli of the lungs. Blood flowing through the lungs releases carbon dioxide continually into the alveoli. The constant aeration of the alveoli throws off this carbon dioxide to maintain normally a partial-pressure level of approximately 40 to 45 millimeters of mercury in the alveolar gas. With hyperventilation this level of carbon dioxide may be lowered quickly to as little as 15 mm. partial pressure, thereby inducing respiratory alkalosis. Respiratory alkalosis is produced by an alteration in the usual 20:1 ratio of sodium bicarbonate to carbonic acid in the blood. The pH of the blood, which normally would be near 7.38, may then be higher than 7.60. Shock and Hastings(6) demonstrated the effect of hyperventilation on the pH of the blood (Fig. 1). In normal subjects 20 minutes of hyperventilation brought a marked increase in the pH of the serum and likewise brought a marked lowering in the partial pressure of carbon dioxide in the blood.

Alkalosis curtails the amount of oxygen available in all portions of the body. A brief review of the physiology of oxygen transport will make clear why this is so. Hemoglobin carries oxygen in chemical combination.(7) Variations in the oxygen pressure to which hemoglobin is exposed determine the proportion of oxygen chemically bound to hemoglobin. Barcroft(8) has illustrated the pattern in which such a union takes place (Fig. 2). It may be noted that normal conditions in the lungs are highly favorable for the union of hemoglobin with oxygen, inasmuch as the partial pressure of oxygen in alveolar air is approximately 100 mm. Hg. If the alveolar oxygen pressure falls to 40 there is still a generous saturation of the hemoglobin with oxygen.

Now it is equally apparent from this curve

that conditions are unsatisfactory for the reverse reaction ( $\text{HbO}_2 \rightarrow \text{Hb} + \text{O}_2$ ) within the body tissues where the partial pressure of oxygen ranges below 40, which is the level usually observed in mixed venous blood. If such a curve were indicative of the dissociation of oxygen from hemoglobin in the tissues, only a small amount of oxygen would be released, even in tissues having a low oxygen pressure.

Barcroft(8) found certain factors that favor the dissociation of oxyhemoglobin. Temperature, the presence of sodium or potassium ions, and variations in the concentration of hemoglobin have minor effects on dissociation. The most important influence favoring dissociation, how-

ever, he found to be a result of increase in the concentration of carbon dioxide (Fig. 3), with a resulting decrease in the pH of the medium in which the reaction occurred. His experimental use of acids other than carbonic acid to establish similar changes in the pH of the medium brought about a similar effect on the curve of dissociation of oxyhemoglobin. An adequate concentration of carbon dioxide in the tissues appears to be a major factor in forcing hemoglobin to relinquish oxygen.

The illustrations are suggestive as to what takes place in man. They are not entirely valid because, owing to buffering effect, the behavior of hemoglobin inside the erythrocyte does not parallel the changes in hemoglobin outside the erythrocyte. These graphs illustrate, however, the importance of respiratory alkalosis in curtailing oxyhemoglobin dissociation.(9)

Other changes also are brought about by respiratory alkalosis and contribute to the hyperventilation syndrome. It has been thought for years that the amount of ionized or available calcium may be influenced by respiratory alkalosis. The binding effect of alkalosis upon ionized calcium indeed would tend to bring about a transitory functional hypocalcemia, thereby causing the tetany observed with hyperventilation. In recent years some doubt may have been cast upon this as a mechanism. Currently there has been interest in the role of potassium as a possible influence on the increased neuromuscular excitability noted in the hyperventilation syndrome. Whatever the mechanism, cer-

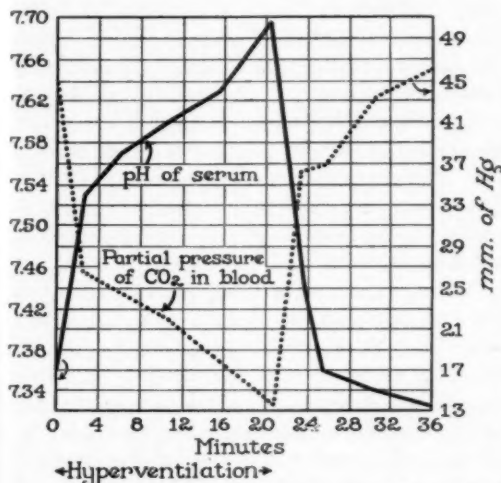


Fig. 1. Changes in the blood during hyperventilation. (Modified from Shock, N. W. and Hastings, A. B.: *J. Biol. Chem.* 112:254 [Dec.] 1935.)

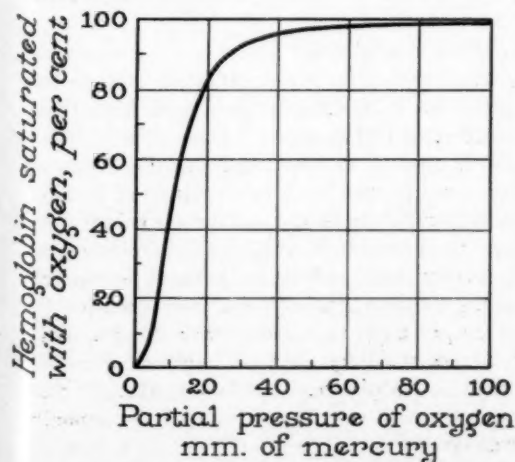


Fig. 2. Curve of dissociation of oxyhemoglobin in the horse. (Modified from Barcroft, Joseph: Quoted in Henderson, L. Jr.: *J. Biol. Chem.* 41:402 [Mar.] 1920.)

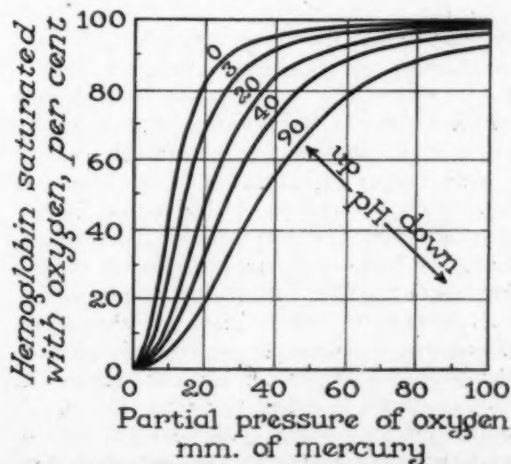


Fig. 3. The effect of changes in the pH of serum, produced by the presence of carbon dioxide at pressures which vary from 0 to 90 mm. of mercury, on the dissociation of oxyhemoglobin in the horse. (Modified from Barcroft, Joseph: Quoted in Henderson, L. Jr.: *J. Biol. Chem.* 41:402 [Mar.] 1920.)

tainly an increase of neuromuscular irritability is associated with respiratory alkalosis.

Measurements of blood flow in the head in the course of respiratory alkalosis have given interesting findings. The diameter of blood vessels in the brain are observed to contract, thereby reducing, perhaps by one-third, the blood flow through the head.(10, 11)

#### *Clinical Appearance*

Regarding the clinical appearance of the hyperventilation syndrome one may make certain observations. The syndrome varies from person to person, although in a given individual it tends to repeat its established pattern. The variation occurs because different systems are more prominently affected among different persons. The ease with which symptoms of respiratory alkalosis may be elicited is greater in some than in others. In certain patients symptoms may be evoked by two or three deep breaths; in others far more overbreathing is required. The presence or absence of associated anxiety influences the reactions observed.

The usual pattern of the hyperventilation syndrome begins with a feeling of giddiness or lightheadedness. As the symptoms progress, although the patient actually has been overbreathing a feeling of suffocation and of inadequacy of respiration develops. Often he will go out of doors, open a window, or fan himself. He will make such statements as "The air is doing no good," "I can't get enough air," "The air is not going down far enough," or, "I can't get a satisfactory breath." At this stage the patient often has a discomforting sense of vague, dull pressure within the chest. Often he will press on the thoracic cage in an attempt to relieve the sensation of a vacuum that he is feeling within his thorax. Tumultuous palpitation may occur at this stage and accentuate his anxiety.

With further hyperventilation a patient soon experiences a sensation of tingling and numbness, occurring first peripherally in a stocking-and-glove distribution, and progressively extending centrally. Often patients feel numb particularly around the mouth. These paresthesias are precursors of tetany. As hyperventilation continues and as respiratory alkalosis deepens in such patients, isolated twitching of various muscle groups develops. Judgment and fine coordination of movement are impaired. With further hyperventilation come spontaneous tetanic contractions of muscles. These occur

initially as carpopedal spasm, but as they progress may lead even to opisthotonus.

#### *Involvement of Central Nervous and Cardiovascular Systems*

In the foregoing description of symptoms associated with hyperventilation may be seen a predominance of symptoms associated both with the central nervous system and with the cardiovascular system. I should like to speak briefly of the effects of hyperventilation upon these systems.

Related to the central nervous system are the impairment of judgment, confusion, and ultimate stupor that may develop in the course of hyperventilation. Other observations also indicate the scope of changes occurring in the central nervous system, particularly the patterns hyperventilation induces in the electroencephalogram. If a convulsive disorder is suggested by an electroencephalogram, hyperventilation will accentuate the abnormal pattern. The incidence of convulsions is increased by hyperventilation.(12, 13) Conversely, measures that induce the state of acidosis have been used as a means of controlling convulsions.

The confusion associated with hyperventilation has particular significance in aviation as a factor in pilot error. This was emphasized by Hinshaw, Rushmer and Boothby.(14, 15) Hinshaw noted it when, as an inexperienced pilot, he encountered a technical flying problem. He had misjudged distance in an attempt at landing. He recognized in himself the symptoms of hyperventilation and by briefly holding his breath brought the syndrome quickly under control.

Patients exhibiting anxiety or conversion hysteria may utilize hyperventilation as a trigger mechanism to facilitate the induction of their hysterical manifestations.

With respect to the cardiovascular system, White and Hahn,(16) after World War I, came to the conclusion that respiratory alkalosis was largely responsible for the syndrome known as neurocirculatory asthenia. Among a group of healthy subjects sighing respiration occurred in but 19 per cent; in a group with the diagnosis of neurocirculatory asthenia sighing was observed in 80 per cent. In World War II this diagnosis was among those mostly commonly overlooked.

Electrocardiographic changes are known to occur with respiratory alkalosis. Thompson(17)



reported changes in the T wave of electrocardiograms of normal subjects after hyperventilation. Barach and his associates (18) studied the effect of the anoxia test for coronary insufficiency to determine whether respiratory alkalosis contributed to electrocardiographic changes noted in coronary-artery disease. They found that respiratory alkalosis made a positive pattern more abnormal, and that the changes were partly corrected as carbon dioxide in small amounts was added to the inhaled oxygen.

#### Diagnosis and Treatment

The diagnosis of hyperventilation syndrome is possible only when the physician is aware that such an entity exists. When he suspects that respiratory alkalosis is the basis for a patient's functional symptoms, the physician may gain added information by having him breathe deeply at the rate of perhaps 30 respirations per minute for 1 to 3 minutes. With this procedure it is interesting to observe that the patient gradually accelerates his respiratory rate. Although one must encourage him during the initial phases of the forced breathing, he breathes faster as alkalosis develops. After a reproduction of his symptoms, he may then reverse this process by allowing carbon dioxide to reaccumulate in the alveoli. The induction of respiratory alkalosis and its reversal with a correction of symptoms will enable an incredulous patient to recognize his symptoms and to observe a means for their correction.

Various methods are available for treating the symptoms of respiratory alkalosis. Perhaps the most important element of the treatment is the reassurance a patient derives from observing that his symptoms indeed are not of the major import he has ascribed to them. There are several helpful procedures the patient can apply. Rather than struggle for a deep breath, the patient should be encouraged to hold his breath for 20 to 30 seconds. This leads to a considerable correction of symptoms of respiratory alkalosis. Of greater help, however, is to rebreathe air, perhaps 10 times, repeatedly from a paper sack. With each exhalation the carbon dioxide content in the sack is increased, and by rebreathing this air the patient builds up the partial pressure of carbon dioxide within his alveoli, leading to a correction of his symptoms of respiratory alkalosis. If it is available, inhalation of a mixture of oxygen with from 3 to 5 per cent of carbon dioxide is useful in the correction of the

hyperventilation syndrome. Patients with hyperventilation syndrome usually improve after treatment by sedation.

This interesting syndrome of hyperventilation is one we encounter daily in our medical practice. An increased understanding and awareness of this condition enables us to help a sizable percentage of our patients who present themselves with a variety of functional diseases, many of whom have shopped from doctor to doctor because they "just know something is wrong."

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#### ARIZONA MEDICAL ASSOCIATION ANNOUNCEMENT ORIGINAL PAPERS — 1960 ANNUAL MEETING

April 1st is the deadline for accepting papers to be judged by the Scientific Assembly Committee to be presented during the 1960 annual meeting in Scottsdale, the award for the most original contribution to be a bronze plaque which will be presented at the president's dinner dance.

# Calcifying Tendinitis and Bursitis of the Shoulder

By

Newton C. Mead, M.D.

**M**ORE THAN ten years ago in a study based on one hundred eighty patients with calcium deposits in the musculotendinous cuff of the shoulder, it was found best to group these patients into acute, subacute, and chronic cases since the mechanism of the production of the pain and the method of relieving the symptoms and pathology differed widely in these three groups. A fourth group, consisting of patients whose chronically involved shoulders suddenly flared up into a picture of acute bursitis, were included with the acute classification.

We were lead to the conclusion that these shoulders were not involved primarily in a bursal inflammation, but that the pathology began in the depths of the tendons on the floor of the bursa. Bursitis occurred in these cases only when the calcifying process in the tendon expanded into a "chemical abscess" and pointed in the bursal floor.

It was further noted that prompt relief of the pain followed release of the tension in these lesions by various surgical procedures or by spontaneous rupture. The presence of calcific material free in the bursa was not a cause of serious pain.

Calcific lesions not under much tension and classified as subacute were not extremely painful, but were sufficiently annoying to require active treatment. These responded best to open operation with removal of the calcific process by incision into the tendon and curettage of the lesion.

The chronic lesions were often so quiet symp-

tomatically that no radical treatment was justified but, when necessary, open surgery with debridement of the bursa and, frequently, excision of a portion of the acromion process, gave good results.

Since this report 1382 calcifying lesions of tendons have been seen at Evanston Hospital. Of these 1255 were located in the shoulder cuff.

## 1382 Patients With Calcification In Tendons

Location	Sex %		Total	Average Age
	M	F		
Shoulder	40.1	59.8	1255	48.9
Wrist	50	50	14	53
Hip	54	46	50	51
Elbow	40	60	30	47
Knee	64	36	25	41
Misc.			8	

The handling of these patients, from the orthopedic standpoint, shows that the conclusions drawn from this earlier series were correct, and our methods have remained very much as they were ten years ago. We have added nothing basic to the original work of Codman, published in 1934, and it seems unfortunate that the profession, as a whole, has not become more familiar with what he wrote.

The anatomy of the shoulder region must be understood before the nature and treatment of calcifying tendinitis can be put on a rational basis.

The strap-like tendons making up the musculotendinous cuff are arranged around the shoulder so as to cover the anterior superior and posterior aspects of the joint. The subscapularis

lies in front, the supra-spinatus and infra-spinatus are attached to the greater tuberosity above, and the teres minor lies posteriorly. There is no well-defined space between these tendons and the true capsule of the joint is difficult to separate from them. They are covered on their outer surface by the synovial floor of the subdeltoid-subacromial bursa. It will be seen that the tuberosity at the point where the supra-spinatus is attached may come in firm contact with the acromion in abduction of the shoulder, a fact of great significance in the etiology and treatment of lesions occurring there.

The subdeltoid-subacromial bursa (usually one continuous space) is large, sometimes measuring over 10 cm. in its largest diameter. It covers the periarticular structures of the shoulder quite thoroughly and permits free motion of these structures beneath the acromion and deltoid muscles. The instillation of air or diadrasit into this bursa will demonstrate its extent.

Inflammatory conditions of the bursa, especially if adhesions occur, will prevent free motion and "frozen shoulder" may result. It may be mentioned here that true frozen shoulder is not a usual sequel of calcific tendinitis, for it occurs in this condition not more frequently than in other painful shoulder lesions.

The interior appearance of a healthy bursa is similar to the interior of a joint, the lining being smooth and white over the tendons and humeral tuberosities. In old degenerative lesions the yellowish synovial lining shows folds and a loss of the glistening lining. There may be coarse adhesions present. Calcific deposits of a chronic nature are situated deeply in these opaque tendons and may not be seen when the bursa is opened.

An acute or subacute process is easy to locate for these are more superficially located in the tendons in the bursal floor and they are surrounded by a zone of definite, often intense, inflammation. The "pointing" white calcific mass may resemble a snow-capped mountain peak, or, more realistically, a boil about to rupture.

Why do these deposits occur? They appear to be a result of injury within the tendon resulting in deposition of insoluble calcium(9) phosphate in an area of increased pH. Their presence in areas of frequent traumata seems to support this, but their relatively infrequent occurrence in overhead workers, and the rather even distribution between the sexes and between right and left shoulders is hard to explain on a traumatic

basis. The lesions are degenerative in nature, but, strangely, are less common in the old patients in whom degenerative lesions are frequent. The commonest age to find calcific tendinitis of clinical importance is between 45 and 50 years.

A more difficult question to answer is: Why do quiet "chronic" deposits suddenly flare up with acute symptoms? Our only answer is that, with continued trauma, the process erodes its way from the deeper portions of the tendon to the sensitive bursal floor where the pain produced may be excruciating. Those deposits which are superficial from the outset do not go through a definite chronic phase but produce acute symptoms from the early stages. Acute symptoms in aged persons with calcium deposits are rare. Calcium in aged tendons is of little clinical significance.

The clinical picture of calcifying tendinitis varies with the acuteness of the process.

The acute flare-up is often a dramatic affair, the patient being completely disabled with pain. A sleepless night nearly always precedes the examination by the doctor. The patient usually has had one or two days of dull annoying pain before the acute pain suddenly appeared. He may recall previous annoyance with the shoulder over a period of years or even previous acute attacks. These patients always will have a localized area of acute tenderness, sometimes with visible or palpable swelling at the site of the pointing calcific process. They will refuse to move the arm.

Patients with subacute calcific processes will have a complaint of dull, vague, annoying pain, usually referred downward to the vicinity of the insertion of the deltoid muscle. Abduction gives pain, and rotation, especially if done rapidly, will also be resisted. Local tenderness is not definite. The pain is generally worse after exercise of the shoulder. Some indefinite pain may be referred distally, even into the hand, but it is never of a segmental distribution. It is not uncommon for chronic calcific deposits, especially in the aged, to produce no trouble at all, but most of them, at times, produce pain similar to that of the subacute group, but less in intensity.

Diagnosis of calcific tendinitis is not difficult since x-rays show the deposits and the symptoms are usually clear. The localization of the mass may be accurately determined if the position of the humerus is known. We insist that views be made in internal rotation to demonstrate depos-

its in the teres minor; in external rotation to show calcification in the subscapularis. Deposits in the supra and infra-spinatus tendons will usually show well in neutral positions. But sometimes a large deposit may be lost behind a bony structure. Occasionally deposits will appear beneath the muscle sheath at some distance from the true tendon.

When calcified deposits have ruptured, their content may often be seen as a suspension in the dependent portion of the bursa.

An error may arise if an innocent quiet calcium deposit is blamed for symptoms produced by other lesions in the shoulder or neck. Therefore, it is proper that some discussion of other painful lesions be included here.

Periarthritis, adhesive bursitis, and capsulitis are different names for the same process. The end result of this is the "frozen shoulder" in which little or no scapulohumeral motion is possible and in which there may be severe aching pain.

Acute calcific tendinitis may be confused with this because the pain may prevent all shoulder motion. Acute calcific lesions always give point tenderness, which is lacking in frozen shoulders, and the pain is more intense. Efforts to move a frozen shoulder passively are not resisted strongly, but this will not be tolerated by the calcific tendinitis sufferer.

In the less acute calcifying process the range of motion is not limited and differentiation is easy. It is well to remember that acute tendinitis, as well as other painful lesions about the shoulder, may finally result in frozen shoulder, and that calcium may sometimes be found in the musculotendinous cuffs of these cases. Frozen shoulders show an inability to move the scapulohumeral joint, which is not accounted for by the pain alone.

Patients who have shoulder and arm pain from pressure or irritation of nerve roots in the foramina of the cervical spine may also show coincidental calcium deposits in the roentgenograms of the shoulder. Care in the examination of these patients will show that shoulder motion itself is not much limited, and tests of shoulder function are carried out well. These patients will often show sensory changes of a segmental distribution. Tests for brachial plexus tenderness and scalenus anticus muscle spasm and/or cervical rib should be made.

Occasionally it will be difficult, in an older

patient with degenerative changes, to rule out rupture of the shoulder cuff. The author has found ruptures unexpectedly on two occasions when opening a bursa in a chronic case of calcific tendinitis. No attempt at repair of ancient defects of this kind need be made. Acute reparable ruptures of the cuff are difficult to diagnose but are not confused with calcific tendinitis and are a separate subject.

Gout may occasionally produce an extremely painful shoulder and may even show opacities in the x-rays. The author has never found uric acid in any deposit he has removed either by needle or by open operation in any of his cases. Nevertheless, it is well to look for other evidence of gout, especially in the older patients in whom other joints and fibrous tissues are painful.

#### TREATMENT

It is important to consider treatment separately in the three groups: acute, subacute, or chronic, for each group is treated differently.

The acute case may be considered a chemical abscess. The object of treatment is decompression of this process and this may be done by radical needling or by open surgery. If this is properly done, relief is prompt and usually permanent. X-ray films taken three weeks after this decompression will show absorption of all or most of the remaining calcium. Other methods frequently used in the treatment of these acute cases, such as x-ray therapy, diathermy, ultrasound, and other non-surgical methods, are reserved for patients who refuse needling or operation. It does appear that some of these methods may cause the "abscess" to rupture into the bursa more rapidly than if the process is allowed to run its course, but the only controlled studies of the results of x-ray treatment suggest it has no effect at all. Despite this, some writers report favorably on the results with x-ray treatment, even in chronic cases, and prefer it to other methods. Spontaneous rupture "cures" the acute attack, but complete absorption of the deposit may not follow this type of decompression and a chronic deposit may persist with the ever present possibility of future flare up. Needling may fail when a number of deposits are present and some are missed, since chronic deposits may be present in acute cases and are easily missed even at open surgery. They may remain to flare up at a later time.

The subacute case, especially when the deposit is a large one, should be treated by open



operation when the symptoms are serious enough to justify this surgery. Needling is often disappointing in these cases because the localization by tenderness is not definite and the deposits may be of the granular or dry type, which do not flush out well. Pain here may be worse after the needling for a number of days than it ever was before and cure sometimes does not result.

Chronic cases should never have radical needling, but they may often be benefited by the injection of Hydrocortone or other steroid suspensions, which quiet the mild bursal inflammation. The use of physical agents, such as x-ray therapy, is ineffective in these chronic cases except for the psychic benefit the patient may receive. Lesions situated deep in the tendons do not produce intolerable pain and such patients do not like the idea of open surgery. It follows that most of them receive no operative treatment or radical needling. When surgery is done the bursa will be found to be degenerated and the deposits will be difficult to locate and they will require curettage for complete removal. Debridement of the folds and adhesions of the bursal lining is often necessary. The area of friction between the greater tuberosity and the acromion will often be evident and present a circular crater surrounded by thickened synovial folds. Rupture of cuff tendons is sometimes found. Visual observation of the effects of vari-

ous movements of the extremity on the structures in the bursa may suggest the resection of the acromion.

In all cases where radical treatment is done, indeed in all cases of calcific tendinitis, it is well to prescribe what we call hanging arm exercises. These are done as follows: With the patient standing and bent forward so that the hand hangs near the floor, the arm is swung loosely in circles, both clockwise and counterclockwise about twenty times in each direction. It is then swung pendulum fashion transversely and also vertically a similar number of times. In this gentle way very painful shoulders can be kept mobile and free of dense tight adhesions in the subacromial bursa.

The technique of needling. (See diagram) With the patient under the influence of a hypodermic of morphine or similar anodyne, he is placed upon his side with the affected shoulder upward. The area of exquisite tenderness is located accurately by very thorough testing with the fingertip. This spot is marked by denting the skin with the point of a forceps or other instrument, after which the skin is prepared by a thorough scrub and such chemical antiseptics as are desired. The tender area is then anesthetized, beginning with a large wheel of 1% novocaine. The muscle is then infiltrated down to the tender area and at this point the patient experiences

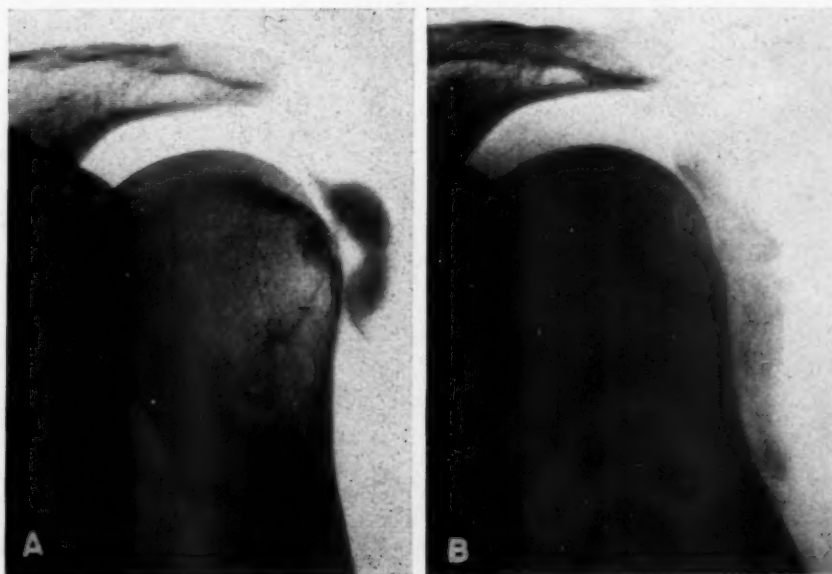


Fig. 1 (A,B)

sharp pain and the operator may frequently withdraw a little cloud of calcified material into his syringe. The area is freely infiltrated with novocaine, the patient complaining of pain as this is done. The needle is left in place. Three or four needles of 18 gauge are now inserted at different angles so that their points will be in the same area as that of the first "guide" needle. Novocaine is alternately injected and withdrawn in an attempt to either withdraw the calcium or flush it out through the other needles. If calcium is not found, the needle is partially withdrawn and inserted at a slightly different angle, and

this is repeated numerous times with each of the needles. Usually calcium will be encountered early in the procedure if it is to be found at all. If the patient is not experiencing pain, the irrigation can be continued with normal saline solution as long as desired without the risk of injecting too much novocaine.

When the surgeon believes he has thoroughly decompressed all calcific deposits, he withdraws all but one needle and through this he inserts 50 to 100 milligrams of Hydrocortone before withdrawing it. The area of the injections is then massaged with a sponge and a small dressing is

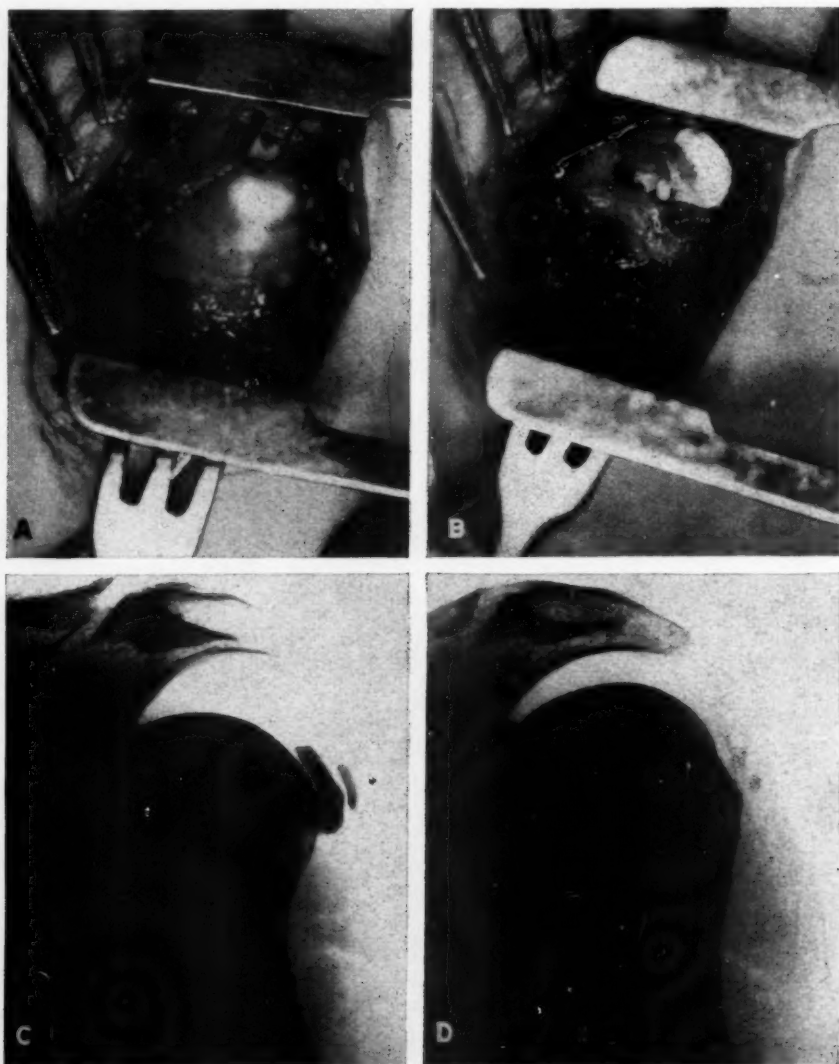


Fig. 2 (A,B,C,D.)

placed over the needle holes, which may be oozing and the patient is urged to move his shoulder through a normal range to convince him it is not painful. If pain of any severity is felt at this point, it is probable that the procedure has not been adequate and a rather painful post-operative course may be expected. A sling may be provided but the patient is ordered to perform the hanging arm exercises four to six times daily until he is well. Sometimes he refuses to do them for about twenty-four hours because the motion is painful, but usually little difficulty is experienced. Because of the frequent period of pain following a needling, which may last from one to several hours, it is well to give a prescription with a good anodyne for the patient to use after he leaves the treatment room.

The technique of open operation. (See illustration). This is done approximately as Codman described it. The patient is placed upon his back with a sand bag under the affected shoulder. The elbow is not supported but rests upon the table. The incision is about two inches in length and starts at the anterior tip of the acromion process and extends downward in line with the deltoid fibers, which may be separated to expose the roof of the bursa, which is the deep fascia of the deltoid muscle. This fascia is incised after being lifted with Allis forceps and the floor of the bursa comes into view. With the shoulder in neutral position, the supraspinatus insertion will be visible through this incision. To inspect the subscapularis the arm is rotated outward. The infraspinatus is seen with moderate internal rotation and the teres minor will come into view if marked internal rotation is done. The bursal floor varies greatly in appearance in these conditions and an acute case will show an intensely red area with a raised yellowish or white center, which indicates the site of a calcified mass. The subacute condition may have a similar appearance but usually there is less intense hyperemia, and the deposit is less superficial and is occasionally hard to find.

When the deposit is incised in the acute case, watery material with curds resembling sour milk may be found, or the deposit may be thick and pasty. It is always under pressure, and may even come out with a little "squirting". The subacute case will usually show soft putty-like material, often with some hard granular deposits in the surrounding tendon tissue. The chronic case may show granular, crystalline, or dry, caked, pow-

dery material, though soft material is sometimes encountered. The author has never encountered calcified material in the bursal cavity itself at operation; it has always been in the tendon substance.

After cleansing and curetting the tendon defect and exploring the whole bursal floor by rotating the arm, closure is accomplished by placing some fine silk sutures in the roof of the bursa and superficial deltoid fascia. The skin is also closed with silk. Occasionally, a large defect of the bursal floor, remaining after the calcium has been removed, will require closure with fine interrupted silk sutures.

A chronic case may show very extensive degenerative changes and little or no inflammation. It may be very difficult to find the calcium, and one may have to resort to x-ray help in the operating room to accurately locate it. In these cases the pain may not be arising from the calcific deposit, and when no deposit under tension is present, the inexperienced surgeon may wonder whether anything advantageous may be accomplished after he has entered and inspected the bursa. It has generally been found that excision of the folds, adhesions and irregularities in the bursal floor will be followed by benefit, and usually with good post-operative treatment, the adhesions do not recur. It has been the author's practice to manipulate these shoulders and study the mechanics inside the bursa at the time of surgery, and this has often led him to excise the outer portion of the acromion process. This can be done in such a way as to allow the detached deltoid muscle to be readily repaired and it can be seen by further tests that the source of friction and irritation has been removed. The results of this procedure have been gratifying and many industrial cripples have been returned to useful work by this means.

Since ladies and, occasionally men, will object to the permanent scar which may follow the classical Codman incision for bursal inspection, it has been my practice, when the cosmetic result is a primary consideration, to make the incision horizontal, which is in line with the natural skin creases. Such incisions, while they do not give quite as easy an exposure, do heal with a less prominent scar.

Complications: Infection has never developed in any case in this series. However, the occurrence of severe pain following needling has been a source of considerable concern in occasional

patients. It has been our practice to warn all patients that a very unpleasant few hours may follow needling. When this does not occur, these patients are not disappointed and if it does occur, they have been warned and are not so alarmed. We have seen only two cases of frozen shoulder following surgical procedures on calcific tendinitis. We give credit to our insistence upon the hanging arm exercises rather than to steroids for this low figure. An allergic response to novocaine was severe in one patient. Multiple joint pain, loss of weight, and other symptoms similar to those of rheumatoid arthritis persisted for nearly a year.

Recurrence of acute calcific tendinitis in a shoulder which has been completely decompressed has been rare (3%). However, inadequately needled patients in whom a few asymptomatic deposits were missed at the time of the procedure may flare up in an acute attack and appear to be a recurrence.

#### CONCLUSIONS

1. There have been no major changes in the understanding or management of calcific tendinitis in the last ten years. The use of steroid suspensions has been added, but has not materially improved results in acute cases when used with or without surgical procedures. These agents have been helpful in the management of the mildly symptomatic, chronic or subacute lesions.

2. Open surgery gives the most consistently good results in acute and subacute deposits. Radical (multiple) needling is a generally satisfactory and often more desirable method in acute cases.

3. The use of x-ray therapy, diathermy, ultrasound and other physical agents to accelerate the spontaneous decompression of calcific masses has not been proved effective and should be restricted to acute lesions where more direct

methods are contraindicated or undesirable. The use of these agents for chronic lesions has only psychic value.

4. The acute painful calcified lesion under tension is a problem entirely different from the chronic or subacute deposit with little or no internal tension. Studies and statistics which fail to separate these types lose much of their value. The acute lesion will respond to treatment which results in decompression or it will rupture spontaneously. In a high percentage of acute lesions the calcified deposit will thus disappear permanently. The chronic lesion responds poorly to any treatment and rarely disappears without surgical treatment. Persons who speak of "self-limited" nature of calcific tendinitis must be speaking about the acute lesion only.

5. The removal of the irritating margin of the acromion in chronic disabling lesions may be very beneficial.

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The number of MDs in shopping centers jumped 35% in one year . . . from 2981 in 1958 . . . to 4025 in 1959.

Most shopping center doctors practice in professional buildings. Of 3035 centers, 1739 have no physicians . . . 856 have MDs in professional buildings . . . and 440 have MDs in other quarters.

Of 4025 MDs, 80.8% are located in professional buildings . . . and 19.2% are located in other quarters.

(from *New Medical Materia*, Vol. 1, No. 10)

Grave concern over the hiring of physicians and exploiting their services by hospitals was manifested when 12 separate resolutions on "relation of physicians and hospitals" were introduced. The introduction of so many resolutions could be construed as a rebuke to the Judicial Council for the leniency of some of its past decisions. The controversy was resolved when the Delegates reaffirmed the 1951 Guides as its policy on hospital-physician relations and that "all subsequent or inconsistent actions be considered superseded."

(AAPS Information Bulletin No. 19-59)



# Tendinitis Calcificante y Bursitis del Hombro

Newton C. Mead, M.D.

EN UN estudio hecho hace más de diez años en 180 casos de depósitos calcíficos en los tendones del hombro se prefirió clasificar los pacientes en agudos, subagudos y crónicos toda vez que el mecanismo de producción del dolor, el tratamiento y la patología diferían considerablemente entre un grupo y otro. Los pacientes con padecimiento crónico que repentinamente manifestaban síntomas agudos se incluyeron en el grupo de los agudos.

Este estudio nos demostró que la patología principal en estos casos no es una reacción inflamatoria de las bolsas y que el dolor se origina en el suelo de la bolsa. La bursitis en estos casos se manifestaba solamente cuando el proceso de calcificación del tendón se convertía en un proceso químico que erupaba en el suelo de la bolsa.

También se descubrió que el alivio en estos casos depende del aminoramiento de la tensión en las lesiones, bien por métodos quirúrgicos o por drenaje espontáneo. La presencia de sustancias calcíficas en sí dentro de la bolsa no causa dolor.

Las lesiones calcíficas sin mucha tensión, las que constitúan el grupo subagudo, no causaban dolor intenso pero si ocasionaban molestias que requerían tratamiento activo. El tratamiento de preferencia en estos casos era la operación para extraer los depósitos calcíficos abriendo el tendón raspando la lesión.

Las lesiones crónicas solían ser muy asintomáticas y la mayoría de los casos no exigían tratamiento radical. Sin embargo cuando era menester se abría el hombro, se limpiaba la bolsa y frecuentemente se amputaba parte del proceso acromio.

Desde la publicación de este informe hemos visto 1382 lesiones calcificantes de tendones en el Evanston, Hospital. De las 1382 lesiones, 1255 ocurrían en el hombro.

## PLACA NUMERO 1

1382 Pacientes Calcificaciones en los tendones

Ubicacion del Depósito Calcífico	Sexo		Total	Edad Promedio
	M	F		
Hombro	40.1	59.8	1255	48.9
Muñeca	50	50	14	53
Cadera	54	46	50	51
Codo	40	60	30	47
Rodilla	64	36	25	41
Miscelaneas			8	

El tratamiento actual de estos pacientes, desde el punto de vista de ortopedia, indica que las conclusiones derivadas del estudio anterior eran correctas y nuestro tratamiento no ha cambiado en forma notable. No hemos agregado a mejorado en nada fundamental el trabajo original de Codman, publicado en 1934, y es una lástima que la profesión en general no se haya familiarizado más con sus conceptos.

Es imprescindible conocer la anatomía del hombro al detalle para poder entender la patología y el tratamiento de las tenditis calcificantes.

Los tendones que componen el grupo del hombro están dispuestos en tal forma que la parte antero-superior y la parte posterior del hombro quedan cubiertas. El tendón subescapularis queda enfrente, el intraespinato y el supra-espinato se insertan en la tuberosidad mayor del húmero y el teres menor yace en el aspecto posterior. Los tendones no están muy bien definidos en su curso y la cápsula propia de la articulación no se distingue en forma clara. El suelo sinovial de la bolsa subdeltoidea-subacromia cubre el grupo tendinoso en su aspecto externo. Está claro que la tuberosidad hace contacto firme con el acromio en la posición de abducción del hombro, detalle que es de importancia máxima en la etiología y el tratamiento de las lesiones en discusión.

La bolsa subdeltoidea-subacromia es grande

en extensión, a veces alcanzando un diametro máximo de 10 cms., y generalmente es continua. Cubre ampliamente las estructuras periarticulares del hombro y permite el movimiento libre de estructuras debajo del acromio y del deltoides. La extensión de esta bolsa puede demostrarse fácilmente con la inyección de aire o de alguna materia radio-opaca.

Las condiciones inflamatorias de la bolsa, sobre todo cuando se han formado adherencias, obstruyen el movimiento libre del hombro y pueden causar el "hombro congelado" (Frozen Shoulder). Sería prudente aclarar aquí que el verdadero "hombro congelado" no es siempre secuela de la tendinitis calcificante porque se encuentra esta condición con igual frecuencia en muchas otras condiciones dolorosas del hombro.

La apariencia interior de una bolsa sin patología es muy similar a la del interior de una articulación. La superficie es suave y blanca sobre todo en sus puntos de contacto con los tendones y las tuberosidades del húmero. Cuando existen lesiones degenerativas la superficie sinovial es amarillenta y áspera con dobleces y pierde la suavidad brillante de la superficie saludable.

Las deposiciones calcíficas crónicas se desarrollan en el interior de estos tendones y se ven solo con dificultad.

El proceso agudo o subagudo se encuentra muy fácilmente porque estos se localizan más superficialmente en el suelo de la bolsa y están rodeados de una zona inflamatoria definida e intensa. La masa calcífica blanca se asemeja a la cumbre de una montaña cubierta de nieve, o más bien a un tumor a punto de reventar.

¿Porqué se forman estos depósitos? Parecen ser el resultado del trauma dentro del tendón. El fosfato cálcico insoluble se deposita en una zona de pH aumentado. Su presencia en lugares de trauma frecuente apoyan esa conclusión, pero su ausencia relativa en personas que trabajan principalmente con los brazos alzados, así como la distribución más o menos igual entre un brazo y el otro no se explican muy bien a base de trauma. Las lesiones son de caracter degenerativo pero sin embargo no se ven con tanta frecuencia en personas mayores como ocurre con otras lesiones de esa índole. La tendinitis calcificante se ve con mayor frecuencia entre los 45 y los 50 años de edad.

Hay otro punto más difícil de explicar. ¿Porqué los depósitos asintomáticos momentaneamente resultan con síntomas agudos? La única

respuesta es que con el trauma continuo el proceso corre a través del tendón hasta llegar al suelo de la bolsa produciendo un dolor muy insoportable. Los depósitos que son superficiales de un principio no pasan por una fase crónica y producen síntomas agudos desde su comienzo.

Los síntomas agudos en personas mayores con depósitos calcíficos son raros. El calcio en estos pacientes es de poco significado clínico.

El cuadro clínico de la tendinitis calcificante varía con la agudeza del proceso

La exacerbación aguda a menudo suele ser un episodio dramático al punto de incapacitar casi totalmente al enfermo con el dolor. El paciente por lo general ha tenido uno o dos días de incomodidad antes de aparecer el dolor agudo. Al tomar la historia se descubrirá que el enfermo ha tenido molestias en el hombro por espacio de años y quizás hasta haya sufrido ataques agudos previos. Al examinar estos casos siempre se encuentra un area de dolor agudo a veces con edema palpable o visible en el centro del proceso calcificante. El brazo está inmóvil por el dolor.

Los pacientes con procesos calcificantes subagudos se quejan de un dolor molesto e indefinido que generalmente se refleja en el area de inserción del deltoides. La abducción y la rotación del hombro agravan los síntomas. El dolor se empeora al ejercitar el hombro y a veces se extiende distalmente hasta la mano pero nunca manifiesta distribución segmentada. No es nada extraño encontrar casos de tendinitis calcificante que no tengan síntomas pero en su mayoría todos producen dolor parecido al del grupo subagudo aunque menos intenso.

El diagnóstico de tendinitis calcificante no es difícil porque los síntomas son claros y las radiografías muestran los depósitos calcíficos. La posición exacta de la masa de fosfato cálcico se puede determinar con exactitud si se conoce la posición del húmero. Nosotros insistimos en que se tomen radiografías del hombro en rotación interna para demostrar los depósitos en el teres menor, y en rotación externa para ver los depósitos en el subescapularis. Los depósitos en el supraespinato y el infraespinato se ven bien en la posición neutral. A veces un depósito más o menos grande se pierde detrás de una estructura ósea. De vez en cuando se ve uno que otro depósito debajo de la masa muscular propia, algo retirado del tendón.

Al reventar un depósito calcifico el contenido se ve como una suspensión en la parte baja de

la bolsa.

Se puede cometer el error de achacar a un depósito calcífico un dolor producido realmente por otras lesiones del hombro o del cuello. Por lo tanto nos incumbe discutir otras lesiones dolorosas en este trabajo.

Periartritis, bursitis adhesiva o capsulitis son nombres distintos para un mismo proceso. El resultado final es el mismo: El "hombro congelado" (frozen shoulder) en el que hay poco o ningún movimiento escapulo-humeral y en el que puede haber dolor severo.

La tendinitis calcificante aguda se puede confundir con este proceso porque el dolor en ambos casos obstruye el movimiento del hombro. Las lesiones agudas calcificantes, sin embargo, producen dolor de punto y el dolor es más intenso. Para mover un hombro congelado en forma pasiva no se encuentra mayor resistencia pero el enfermo no resiste eso cuando sufre de tendinitis calcificante.

En los procesos menos agudos el margen de movimiento no se limita y la diferenciación es fácil. Hay que recordar que la tendinitis aguda, así como las otras lesiones del hombro, pueden resultar en fin de cuentas en un "hombro congelado" y que el calcio se puede encontrar a veces en el grupo musculotendinoso del hombro de estos casos. Los "hombros congelados" se caracterizan por la limitación del movimiento escapulo humeral, cosa que no se explica solamente a base de dolor.

Los pacientes que tienen dolor en el hombro y en el brazo por razón de presión o de irritación de las raíces del nervio en los forámenes de la columna vertebral cervical pueden mostrar depósitos calcíficos coincidentes en la radiografía del hombro. Al examinar estos enfermos cuidadosamente se demostraría que el movimiento del hombro es muy limitado y el examen se hace sin dificultad. Estos enfermos manifestarán cambios de sensación con distribución definitivamente segmentada. Se les debe examinar para cerciorarse de que no hay irritación del plexo braquial, espasmo del escaleno-anticus o una costilla cervical.

A veces se dificulta, sobre todo en personas mayores con cambios degenerativos, diagnosticar un desgarre en el agregado musculo-tendinoso del hombro. El autor ha descubierto desgarres inesperados en dos casos al abrir una bolsa en un caso crónico de tendinitis calcificante. No hay necesidad de reparar un desgarre viejo. Los

desgarres agudos del agregado musculo-tendinoso son difíciles de diagnosticar pero no se confunden con tendinitis calcificante y constituyen un tema aparte.

La gota de vez en cuando presenta un cuadro clínico de dolor agudo en el hombro y en algunos casos hasta muestra opacidades en la radiografía. El autor nunca ha encontrado ácido úrico en ningún depósito que el haya extraído bien sea con aguja o con exposición abierta. Sin embargo siempre la posibilidad de gota se debe investigar sobre todo en personas mayores que sufren dolores en otras articulaciones y tejidos fibrosos.

Es muy importante considerar el tratamiento en tres grupos por separado: los casos agudos, los casos subagudos y los crónicos ya que cada grupo se trata en forma diferente.

El caso agudo es como un absceso químico. El objeto del tratamiento en este caso es reducir la tensión dentro del absceso bien sea con agujas o con exposición abierta. Hechos correctamente estos dos métodos dan alivio pronto y duradero. Las radiografías que se tomen tres semanas después de haber reducido la tensión mostrarán la absorción casi completa del residuo calcífico. Los tratamientos misceláneos como la radioterapia, la diatermia, la ultrasonoterapia y otros métodos no quirúrgicos se reservan para aquellos enfermos que rehúsen la operación o el tratamiento de agujas. Algunos de estos métodos pueden precipitar la ruptura del absceso adentro de la bolsa mucho más pronto que si se dejara al proceso seguir su curso natural. Los únicos estudios controlados hechos en radioterapia sugieren que este método no tiene efecto alguno en esos casos. A pesar de esto algunos investigadores informan resultados favorables con radioterapia aún en casos crónicos y lo prefieren a otros métodos. La ruptura espontánea "cura" el ataque cuando la decompresión es espontánea y puede quedar un residuo crónico que cause una recidiva en el futuro. Cuando hay muchos depósitos el tratamiento con agujas puede resultar en fracaso o porque algunos depósitos crónicos pueden pasar desapercibidos aún en operaciones abiertas. Estos residuos pueden erupcionar otra vez en el futuro.

El caso subagudo, particularmente cuando el depósito calcífico es grande y cuando la severidad de los síntomas lo justifica, debe tratarse con operación. El tratamiento con agujas no da resultado en estos casos porque se dificulta



localizar los puntos de dolor y además porque estos depósitos están ya secos y granolados y se pueden lavar bien. Los casos subagudos pueden sufrir dolor insoportable después de un lavaje con agujas y la cura definitiva es tan dudosa que no vale la pena correr el riesgo.

El caso crónico nunca debe tratarse con agujas pero a menudo suelen mejorar con la inyección de hidrocortona o cualquiera otra suspensión de esteroideos que aplaquen la inflamación leve de la bolsa. La fisioterapia en estos casos no es efectiva excepto por su valor psicológico. Las lesiones localizadas profundamente en el tendón no producen dolor intolerable y los enfermos no aceptan con gusto la proposición de cirugía. La mayor parte de ellos no se someten al tratamiento de agujas ni a la operación. Cuando se hace cirugía la bolsa se encuentra degenerada, los depósitos se encuentran con mucha dificultad y hasta hay que hacer curetage para extraerlos. Muchas veces hay que hacer debridment de los dobleses y las adherencias del interior de la bolsa. El área de fricción entre la tuberosidad mayor y el acromio se verá claramente y presenta un crater circular rodeado de dobleses sinoviales gruesos. A veces los tendones se encuentran desgarrados. Al observar los efectos de varios movimientos de la extremidad en las estructuras de la bolsa, el cirujano opta por la resección del acromio.

En todos aquellos casos en que se hace tratamiento radical y hasta en todo caso de tendinitis calcificante se le recomienda al enfermo los ejercicios con el brazo colgando ("hanging arm exercises"). Estos ejercicios se ejecutan en la siguiente manera: con el enfermo de pie pero doblado hacia enfrente de suerte que la mano cuelgue libremente, el brazo se mueve en círculos primero hacia la herecha y luego en dirección opuesta, aproximadamente 20 veces en cada dirección. Este ejercicio mantiene el hombro móvil y libre de adherencias en la bolsa subacromia aún en los casos mas dolorosos.

La técnica del tratamiento con agujas, (vease el diagrama).

Después de suministrarle morfina u otro anodino el enfermo se coloca sobre el costado apoyado al hombro afectado. El área de dolor agudo se localiza con precisión usando presión leve con el dedo. Se marca el punto con una pinza y se prepara la piel en forma estéril como para cirugía mayor. Se adormece el área superficial con novocaína al 1% después se infiltra el

músculo hasta el área dolorosa profunda. Al punzar este punto el enfermo siente un dolor agudísimo y el cirujano logra a veces aspirar una substancia lechoza con la jeringa. Aquí se inyecta otra vez la novocaína, cosa que produce nuevamente un dolor severo. Se deja la aguja en esta posición y luego se colocan tres o cuatro agujas de calibre 18 a diferentes ángulos pero todas señalando hacia la punta de la aguja guía. Inyéctese novocaína con movimientos alternados del émbolo de la jeringa de suerte que se establezca una corriente fluida en el espacio afectado. En esa forma cualquier calcio que haya en suspensión saldrá libremente por una o más agujas. Si no se encuentra calcio saque la aguja parcialmente y vuélvala a introducir a un ángulo diferente. Repítase la última operación con cada una de las agujas. Por lo general el calcio se encuentra en los primeros pasos del proceso, si es que lo hay. Si el enfermo no siente mucho dolor se puede repetir indefinidamente el procedimiento usando solución salina fisiológica para no correr el riesgo de usar novocaína en exceso.

Cuando el cirujano cree que ha extraído todos los depósitos calcíficos saca todas las agujas menos una, por la que se inyectan de 50 a 100 mgms. de cortona. Una vez terminada la operación se le da un masaje al enfermo y se le pone un vendaje. Ordene al paciente que mueva el brazo en toda su extensión y si no hay dolor la operación ha sido un éxito. Cuando el hombro duele al moverlo anticipe un período de dolor y a veces hay que aceptar el resultado como mediocre. Ponga el brazo en un cabestrillo pero ordene al enfermo a hacer el ejercicio con el brazo colgado que se describió anteriormente de cuatro a seis veces por día hasta que se sienta bien. De vez en cuando el enfermo se rehúsa a hacer los ejercicios por 24 horas porque le duele mucho el hombro al moverlo pero por lo general no hay mucha dificultad. Désele al enfermo una receta para que tome un anodino en su casa si el dolor es muy intenso.

La técnica de la operación (vease la figura). Esta operación se hace más o menos como la describió Codman. El enfermo se coloca boca arriba con un saquito de arena debajo del hombro afectado. El codo descansa sobre la mesa. La incisión es como de 2 pulgadas de largo comenzando en la punta anterior del acromio y extendiéndose a lo largo de las fibras del deltoides. Para ver el techo de la bolsa, que



es la fascia profunda del deltoides, se separan las fibras del músculo hasta llegar a la fascia. Ábrase la fascia y levántense los lados de la herida con pinzas de Allis para ver el suelo de la bolsa. Con el hombro en posición neutral se verá la inserción del supra-espinato. Para inspeccionarse el subescapular hay que rotar el brazo hacia afuera. El infraespinato se ve al rotar el hombro ligeramente y el teres menor se divide al rotar el hombro en forma más pronunciada.

El suelo de la bolsa varía en apariencia en estas condiciones y en el caso agudo se verá una area rojiza de inflamación con el centro blanco o amarillento y levantado indicando la posición de una masa calcifica. La condición sub-aguda puede presentar un aspecto similar pero generalmente hay menos hiperemia y el depósito es más profundo, lo que dificulta a veces hallarlo.

Al abrir la masa en el caso agudo se extrae un material como leche cuajada o a veces espeso y pastoso. Siempre hay tenión dentro de la masa y la substancia puede salir a chorro. En el caso subagudo generalmente se encuentra una substancia blanca y a menudo con depósitos granulares en el tejido tendioso que lo rodea. El caso crónico contiene material granulado cristalino y a veces hasta seco o polvoso aunque de vez en cuando puede ser también blando. El autor nunca ha encontrado material calcificado en la cavidad de la bolsa en sí, sino más bien en el mero tendón.

Después de limpiar y raspar el defecto del tendón y explorar el suelo de la bolsa rotando el brazo se cierra la herida con sutura de seda fina en el techo de la bolsa y la fascia superficial de deltoides. La piel también se cierra con seda fina.

De vez en cuando queda un defecto en el suelo de la bolsa después de extraer el depósito de calcio. Si eso sucede se repara el defecto con seda muy fina en suturas interrumpidas. El caso crónico puede manifestar cambios muy marcados pero con poca inflamación. En estos casos el depósito calcifico a veces no se encuentra y hay que recurrir a la radiografía en la sala de operaciones para localizarlo. El dolor en estos casos no se debe a los depósitos calcificos y cuando no hay tensión interna en la masa el cirujano inexperto puede dudar de la necesidad de abrir un hombro así. La experiencia sin embargo ha probado que la excisión de los dobleses,

adherencias e irregularidades en el suelo de la bolsa resulta en gran beneficio. El autor acostumbra manipular estos hombros y estudiar la mecánica dentro de la bolsa en el transcurso de la operación. Si las condiciones del hombro lo indican se extrae parte del proceso acromio. Para hacer esto hay que desprender el deltoides que se puede reparar sin dificultad. Los resultados de este procedimiento han sido muy halagadores y muchos lisiados industriales han vuelto a ganarse la vida en su trabajo.

En aquellos casos con que los efectos cosméticos de la incisión clásica de Codman es de importancia particular para el enfermo, el autor opta por una incisión horizontal conforme a los pliegues naturales de la piel. Esta incisión, aunque no permite la exposición de la bolsa tan bien como la de Codman, cicatriza mejor.

### COMPLICACIONES

Nunca ha habido infección en esta serie de casos, sin embargo el dolor después del tratamiento con agujas ha sido insoportable para algunos pacientes. El autor recomienda que se le advierta al enfermo que puede sufrir dolor fuerte después del tratamiento. Así el paciente no se decepciona.

Hemos visto apenas dos casos de hombros congelados después de la cirugía. Nosotros creemos que la ausencia relativa de esta complicación obedece a nuestro hincapié en los ejercicios con el brazo colgado más bien que al uso de los compuestos esteroideos. Un enfermo tuvo una reacción alérgica violenta a la novocaina. Este enfermo sufrió dolores articulares generalizados, pérdida de peso, y otros síntomas parecidos a los de la artritis reumatoidea por casi un año después.

Las recidivas en casos de tendinitis calcificante aguda que han sido sometido a la decompresión del depósito son raras. (3%). Sin embargo, cuando se dejan depósitos calcificos puede haber ataques de dolor agudo que simulan recidivas.

### CONCLUSIONES

1. No han habido cambios mayores ni en el entendimiento ni en el tratamiento de la tendinitis calcifica en los últimos diez años. Los esteroideos se usan pero no han mejorado en forma definitiva los resultandos en casos agudos cuando se usan con o sin los procedimientos quirúrgicos. Estos compuestos sí son efectivos en el tratamiento de los casos benignos, los crónicos o en las lesiones subagudas.

2. Con la cirugía se obtienen mejores resultados en los casos agudos y subagudos. El tratamiento con agujas es satisfactorio y a menudo preferible en los casos agudos.

3. El uso de rayos-X, diatermia, ondas ultrasónicas y otros agentes físicos para acelerar la decompresión de las masas calcíficas no es efectivo y se debe dejar para aquellos casos agudos en que los métodos más directos se contraindiquen o sean indeseables. El uso de estos agentes tiene solo valor psicológicos.

4. La tendinitis calcificante aguda y dolorosa y con tensión es un problema muy distinto al caso crónico o subagudo con poca o ninguna tensión interna. Las estadísticas que se acumulan sin separar estos dos grupos no tienen casi ningún valor. La condición aguda responderá al tratamiento que resulte en compresión o se reventará espontáneamente. En un alto porcentaje de las lesiones agudas el depósito calcífico desaparecerá permanentemente. La lesión crónica no responde bien a ningún tratamiento y raras veces desaparece sin tratamiento quirúrgico. Los que digan que la tendinitis calcifica

se alivia sola se refieren por fuerza solo a la lesión aguda.

5. La amputación del margen irritante del acromio en las lesiones crónicas puede ser muy beneficiosa.

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#### ANNOUNCEMENT 1960 ANNUAL MEETING

American Academy of General Practice Category I credit, 12 hours, 1960 annual meeting, Scottsdale.

The rate of first admissions to mental hospitals for paresis, a complication of syphilis, has dropped from 4.7 per 100,000 population to 0.5 since the antibiotics were introduced. In spite of such figures, according to Health Information Foundation, the problems of venereal disease in the U. S. are far from solved, chiefly because of public apathy and ignorance.

Despite sharp drops in the incidence of venereal disease since the development of antibiotics, an estimated 60,000 cases of syphilis and 1,000,000 of gonorrhea are still acquired each year. "Complete elimination of these diseases," says Health Information Foundation, "is at this point far from achieved."

#### ARIZONA MEDICAL ASSOCIATION ANNOUNCEMENT ORIGINAL PAPERS — 1960 ANNUAL MEETING

April 1st is the deadline for accepting papers to be judged by the Scientific Assembly Committee to be presented during the 1960 annual meeting in Scottsdale, the award for the most original contribution to be a bronze plaque which will be presented at the president's dinner dance.

#### News Item

Dr. J. H. McCurry, of Cash, Ark., advises that he has the approval of the American Medical Association to organize a Fifty Year Club within the AMA. Dr. McCurry is anxious to hear from physicians who have been in practice fifty years or more who desire to become members of this club, giving their name and a complete address.

The first meeting is to be held in Washington, D. C. at the Clinical meeting November 29 to December 2, 1960.

## The Value of Visual Field Examination in the Diagnosis of Pitutuary Tumors

Thomas L. Royce, M.D.

**V**ISUAL field defects which are associated with pituitary tumors are probably the most generally recognized of all visual field abnormalities.

The failure of many of us in medicine, which includes some in ophthalmology, to utilize visual field studies in the diagnosis of pituitary tumors is responsible for the marked visual losses which occur far too frequently in these cases. Earlier diagnosis followed by the proper definitive therapy will result in a much more favorable visual prognosis. It must be remembered that the diagnosis of pituitary tumors cannot be made solely by a visual field examination which may indicate chiasmal involvement. Signs of pituitary dysfunction as occurring in acromegaly, gigantism, and Frohlich's syndrome are well recognized.

The radiological findings are extremely pertinent — usually the sella turcica is enlarged and the clinoid processes are eroded from below and on occasion the floor of the sella may disappear.

The most important ocular complaints have to do with failing vision and are frequently associated with headaches. Visual symptoms consist mostly of impairment of central visual acuity and visual field defects.(1)

Let me briefly review the course of the optic nerve fibers in the chiasmal region. Wilbrand's(2) studies, done many years ago, picture the chiasma as being composed of 3 layers. The upper layer fibers are from the upper quadrants

of the retina; non-crossing fibers outnumber the crossing fibers. On the middle layer the crossing fibers are largely from the upper nasal quadrants of the retina; the non-crossing largely from the lower temporal quadrants; the numbers of crossing and non-crossing fibers are approximately equal. The lower chiasmal layer is composed of crossing fibers which arise in the lower nasal quadrant of the retina and loop forward into the optic nerve of the opposite side before they turn backwards to enter the optic tract. fibers distributed over different sections of the

It is this bundle which is usually interrupted first by a pituitary tumor pushing against the lower and anterior portion of the chiasma. Defects produced by pituitary tumors are due to pressure on the chiasma. Besides obstructing the function of the nerve fibers, there is also interference with the blood supply, and large tumors may push the chiasma against rigid neighboring structures as the anterior part of the circle of Willis and also extend into the area of the cavernous sinus where the 3rd, 4th, and 6th cranial nerves may be involved.

There are many different types of equipment used for demonstrating visual field defects. Most ophthalmologists use a Ferree-Rand type perimeter for peripheral field examinations with a distance between the eye and the test object of 330 millimeters. Rucker(3) emphasized the value of early visual disturbances in localizing pituitary tumors.

The tangent screen is usually used for central field studies. Central field examination is much

Presented at Annual Meeting Arizona Medical Association, Chandler, Arizona, April 28 to May 2, 1959.

more informative than peripheral field studies. On many occasions where the peripheral fields are normal, small defects can be detected on tangent screen studies using 1 mm, 3 mm, and 5 mm white test objects. The examination is usually performed at a distance of one meter. Studies with the tangent screen are so informative until there is little need for peripheral field studies. The principle difficulty with visual field examinations is the lack of enthusiasm among many ophthalmologists to do visual field studies.

In order for disease affecting vision to be diagnosed early, physicians in all categories of practice have 2 types of visual screening tests which can usually uncover visual defects. The central vision can be determined by the use of the Snellen Chart and the visual field defects can be determined by the confrontation method which is a very gross technique and will only disclose large field abnormalities. Even so, this test alone which takes less than 2 minutes to perform can be very valuable to the medical practitioner. There is another technique that can be performed by the medical diagnostician in exposing visual field defects — the multiple target visual field screener.

Visual field screening has the advantage of detecting many of the great numbers of diseases that affect the retina, the optic nerve and the higher visual pathways and visual cortex. It is true that in some of the early stages of disease causing visual field defects these defects cannot be detected in all instances.

The recent introduction of the Harrington-Flock Multiple Pattern Field Screener\* has greatly stimulated interest in visual field screening. This device is a multiple pattern method of visual field examination based on the principle of flash presentations of simple test patterns distributed over different sections of the visual field. The examinee is to state the number of dots or crosses which he can detect when the examiner flashes them. This test can be done on 5 year old children. Generally, children respond quicker than old patients. Most false negative and false positive responses are in the older age groups. The degree of attention and alertness affects the responses of the examinee. This test can be completed in less than 5 minutes and office personnel, other than the physician,

can be taught to perform this examination. Poor visual acuity does not hinder the testing if due to refractive errors. However, subnormal vision if due to disease, as cataracts, may cause faulty response.

### CASE RECORDS

Fig. 1. Mrs. A. S. — Pituitary tumor.

A 32-year old white female who was in an auto accident when 15 years old, injuring eyes and almost completely losing right eye. Vision began getting dim and she was fitted with glasses which she has had changed through the years; but lately she has noticed that change in glasses would not improve vision. She has also had a rapid gain in weight in the past three years, and cessation of menstruation since February 1946. Headaches frequently associated with vomiting has occurred during the past 5 years. Vision has become seriously impaired in the past year.

X-ray of skull revealed complete erosion of the dorsum sella and posterior clinoid processes with erosion of anterior clinoid, and depression of floor of sella into sphenoid sinus.

Visual field examination revealed a bitemporal hemianopic defect with complete loss of temporal field, right eye. Fundus examination revealed no evidence of optic atrophy. Given X-ray therapy.

Fig. 2. Mrs. D. A. F. — Chromophobe adenoma of the pituitary gland.

A 33 year old white female who has complained of headache and some visual difficulty for many years, and which has bothered her more during the past year. At present she states that her headaches are associated with some holes in visual fields. There is some blurring of vision. She has had irregular menstrual periods since age of 17 years, and frequent periods of amenorrhea lasting several months. She menstruated 2 months ago, for the first time in two years.

X-ray of skull reveals ballooning of the sella turcica with the floor being depressed more on right (consistent with chromophobe adenoma). Visual field examination reveals bilateral supero-temporal quadrantic defects. Fundus examination reveals no evidence of optic atrophy. The treatment consisted of irradiation using the betatron irradiator.

Fig. 3 and 3A. Mr. F. J. D. — Pituitary tumor.

A 42 year old white male who complained of visual difficulty of three months' duration. He

\*Harrington-Flocks Multiple Pattern Visual Field Screener is manufactured by Burton Manufacturing Co., Santa Monica, California. The Multiple Target Screener is manufactured by Roberts Instrument Co., Moberly, Missouri.



was fitted with glasses but the vision did not improve. The sella turcica is considerably enlarged and the dorsum cannot be recognized.

X-ray of skull revealed considerable enlargement of the sella turcica. Visual field examination showed a superior temporal defect, left eye. There was pallor of the left disc.

Fig. 4. Mr. W. D. - Pituitary adenoma.

A 59 year old white male who had been complaining of failing vision during the past year. Right eye vision: 20/200-1; Left eye vision 20/60. Right eye tension: 17; Left eye tension 17. Fundus examination revealed definite pallor of both discs and moderately advanced macula degeneration, left eye.

Visual field examination reveals bitemporal defects with large centrocaecal scotoma, left eye, which was thought to be due to macula degeneration.

X-ray of skull reveals enlargement of the sella

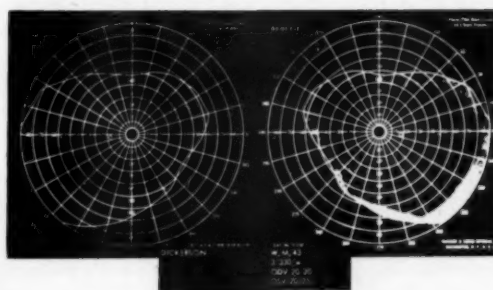


Fig. No. 3A



Fig. No. 1



Fig. No. 2

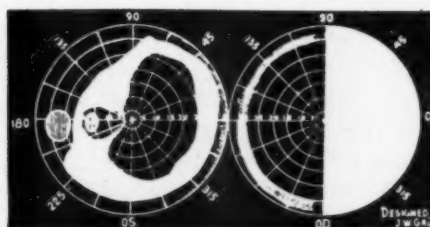
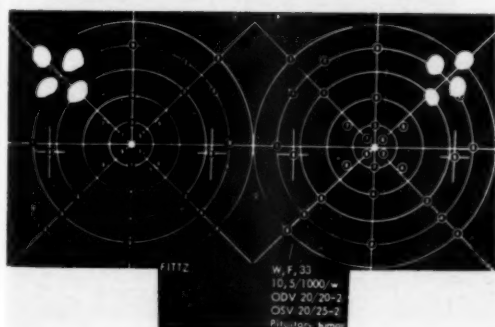


Fig. No. 4



with erosion of clinoids. The tumor was removed surgically and found to be chromophobe adenoma. There has been no further deterioration in visual fields and slight improvement in central visual acuity since surgery.

Fig. 5. Mrs. P. S. C. — Pituitary tumor.

A 31 year old white female who was treated in 1950 for symptoms thought to be chromophobe adenoma. Good regression was obtained, but again in 1957, signs of progression were noted, so surgical extirpation was performed. Eye examination January, 1959, reveals field defects occupying more than one-half of the visual fields bilaterally. Fundus examination reveals bilateral optic atrophy. X-ray therapy was given in addition to previous surgical treatment with only slight improvement in visual fields.

Fig. 6. Mr. J. A. B. — Pituitary tumor.

A 39 year old white male who developed severe headaches in early morning, about 8 to 10 years ago. Later complained of visual symptoms, described as "glariness everywhere he looked." After this, noticed partial loss of vision in right temporal field. By 1954, he had lost complete vision in left eye. He was operated for pituitary tumor followed by X-ray therapy. Vision did not improve. Now he has total loss of vision in left eye and loss of vision in temporal field, right eye. In October 1955, he had a seizure of grand mal type, another in June 1956.

Ophthalmoscopic examination reveals complete optic atrophy, left eye, and partial optic atrophy, right eye.

Fig. 7 and 7A. Mr. M. A. M. — Pituitary tumor.

A 37 year old white male who began having trouble with vision in left eye the past eight years. He was fitted with glasses which did not help vision. Hat size increased from 6¾ to 7¾. Shoe size increases about ½ size a year since then. He has had headaches for the past six to eight years. Hands have been growing and tongue has become thick and heavy. He complains of easy fatigability and low energy level. He developed definite blind spot in left visual field.

X-ray of skull revealed marked expansion of the sella turcica, thought to be the pituitary tumor, (eosinophilic adenoma). Visual field studies revealed bitemporal central field defects with no involvement of temporal field defects. Fundus examination revealed no evidence of optic atrophy.

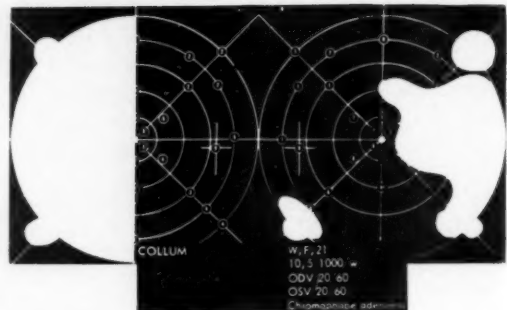
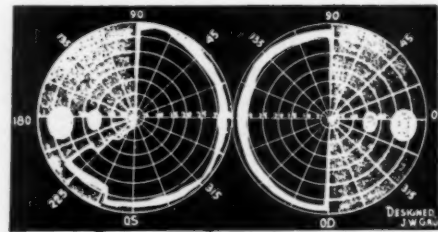


Fig. No. 5

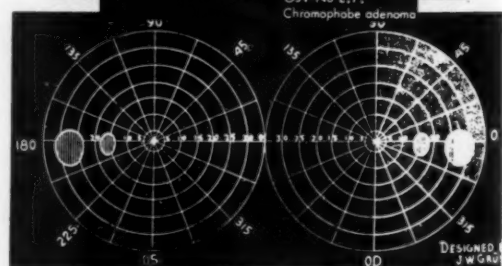
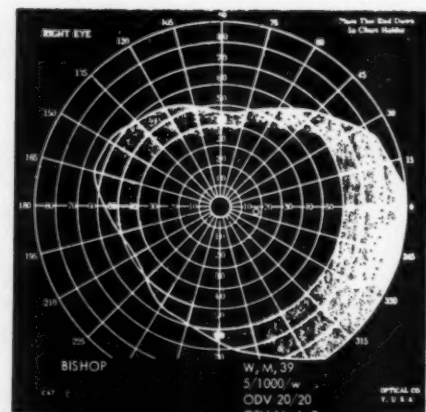


Fig. No. 6

Fig. 8 and 8A. Mr. O. H. — Pituitary tumor.

A 29 year old white male, who at the age of 10, had visual difficulty at which time he developed temporary visual disturbances which lasted three weeks. This was associated with headaches of frontal and fronto temporal distribution which were intermittent, occurring several times a week and lasting several hours. In 1952, again developed headaches and had some decrease in visual acuity. Headache continued for about 2 years, at which time he was fitted with glasses which helped vision. He eventually lost all central vision in right eye. Fundus of right eye presents slight optic atrophy. X-ray of skull showed enlargement of sella turcica consistent with pituitary adenoma of the chromophobe type.

Visual field examination revealed complete temporal hemianopic defects, both eyes. Fundus examination revealed bilateral disc pallor. X-ray therapy resulted in slight improvement of visual fields during six months period following therapy.

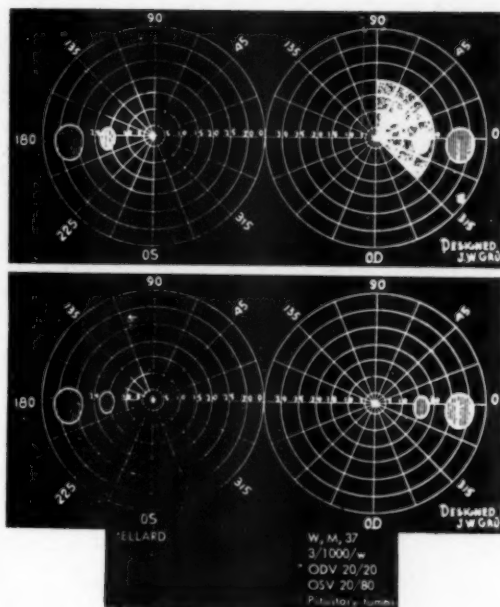


Fig. No. 7

Fig. 9. Mrs. M. L. — Pituitary tumor.

A 52 year old white female who states that in July 1956, when attempting to thread a needle, she noticed that her vision would dim, but thought this was due to improperly fitting glasses. In November, 1956, she began having severe band-like headaches which would wake her during the night, and were localized in the right frontal area. The eyeballs would ache, and a marked blurring of vision occurred during these attacks. On December 21, an episode of severe nausea and vomiting lasted all during the night. Examination December 31, 1956, revealed vision correctable to 20/200, right eye, and 20/15, left eye.

Skull X-rays reveal enlargement of sella turcica compatible with pituitary adenoma. Visual field studies reveal bitemporal peripheral field defects in both eyes.

There is slight optic atrophy, right eye. Therapy consisted of surgical removal followed by X-ray therapy.

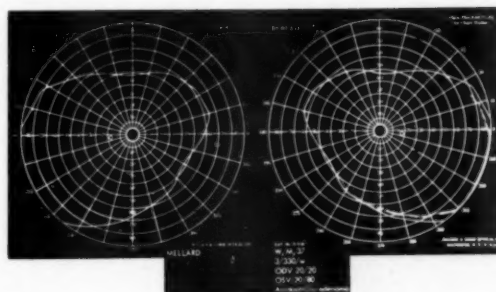


Fig. No. 7A

Fig. 10 and 10A. Mrs. O. A. H. — Pituitary tumor.

A white 58 year old female, who states that about four weeks ago, she developed light pain in left eye which persisted for one week, after which she noticed decreasing clarity of vision of left eye, with redness of conjunctiva. She developed "double and triple vision." At onset, the left eye was rotated laterally and fixed in this

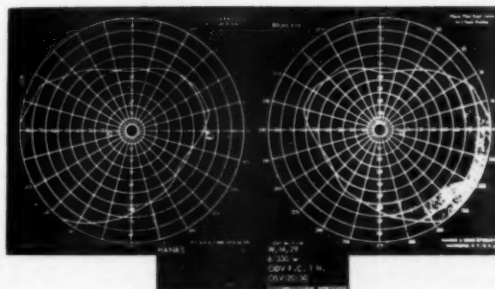


Fig. No. 8

position for 24 hours, after which the extraocular muscle function apparently became normal.

Visual field examination, both peripheral and central, revealed no visual field defects. Fundus examination showed no abnormalities. Examination of extraocular muscle revealed a partial third nerve palsy, left, which was attributed to extension of the pituitary tumor to the left of the dorsum sella.

X-ray therapy resulted in complete return of left third nerve function.

### DISCUSSION

In over 100 cases having visual field defects who were tested on the multiple target screener only one significant defect was missed. This compares favorably with a recent series directed by William Havenan, M.D.,(4) in which he obtained false negative of 1.7%. False positives in my series averaged 3%, most of which had some eye disease which warranted ophthalmologic care, as cataracts and superficial infections. This percent of false positives has decreased as our technique in testing has improved.

Those patients who come to physicians with complaints of headaches, dizziness, and visual disturbances should be screened as a routine procedure. The equipment is inexpensive and undoubtedly will lead to the diagnosis of many central nerve system disorders and usually at an earlier time, which would afford a better chance for effective treatment.

In the treatment of pituitary tumors it is the problem of the neurosurgeon to decide whether X-ray therapy or surgery is to be employed. Usually these cases can best be handled if there is close team work between the radiologist, neurosurgeon and ophthalmologist. Generally speaking, X-ray therapy is used in cases where there is no severe loss in either central vision or visual fields and surgery is used where visual loss is advanced and where there is evidence of cyst formation. Again the mode of treatment depends on the neurosurgeon, some of whom use the surgical approach in all cases of pituitary tumors even if there is only minimal visual involvement.

In all instances, and especially where X-ray therapy is employed, the ophthalmologist should do repeated central visual field studies. In cases receiving X-ray therapy these studies should be repeated at 7 day intervals until the therapy

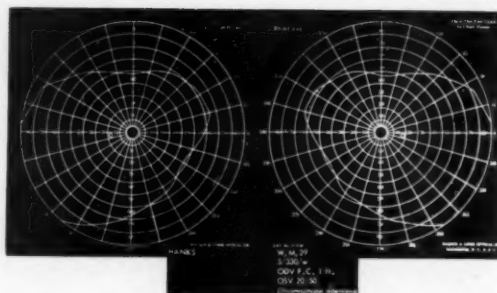


Fig No. 8A

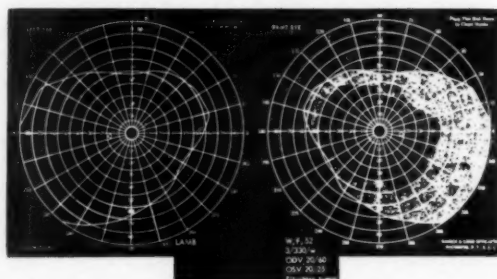


Fig. No. 9

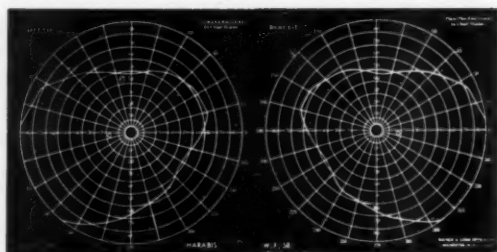


Fig. No. 10



Fig. No. 10A



has been completed and then monthly for the first year following treatment. If there is loss in visual fields during the time active treatment is being given, the radiologist is advised in order that he may diminish dosage or frequency of treatment and in cases of severe field encroachment it may be necessary to discontinue X-ray therapy. Visual field loss during the time irradiation is being given is usually due to sudden increase in the size of the tumor due to edema.

If visual loss continues surgery should be considered. Lesions responsible for failure are meningioma, craniopharyngioma, aneurysm and pituitary carcinoma.

Improvement from irradiation occurs most frequently during the first and second years after treatment.(5) In a series of cases receiving radiotherapy for pituitary adenoma, Chamlin concluded that one should allow 4 to 6 months after concluding treatment before assuming that no improvement will take place and at least 2 to 3 years before judging the total amount of improvement.

The color of the optic discs is important in the prognosis of visual recovery following treatment of pituitary tumors. Usually the optic discs will remain pink until visual loss has been present for several months. Most patients with pituitary tumors have optic disc pallor, the amount usually being proportionate to the

amount and duration of the visual loss. Generally when the discs are pink despite the amount of visual loss the chances of visual improvement are good. When visual loss is great with minimal pallor, improvement may be expected; and when there is marked pallor, improvement is not to be expected.

### CONCLUSIONS

Emphasis must be placed upon the early diagnosis of pituitary tumor in order to obtain the best results. This can only be achieved by the awareness of all medical practitioners.

The determination of the central visual acuity and visual field screening should be done routinely — especially on those patients complaining of visual disturbance, headaches, and dizziness or other complaints referable to the central nervous system.

Multiple target visual screeners are effective in uncovering visual field defects, and can be operated efficiently in any physician's office.

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## ITALIAN ANTIBIOTIC SHOWS "GOOD PROMISE"

Investigators from Milan presented four papers describing laboratory and clinical findings with a new antibiotic, rifomycin B, which reportedly exhibits promising activity against gram-positive bacteria and mycobacteria and possesses a low index of toxicity.

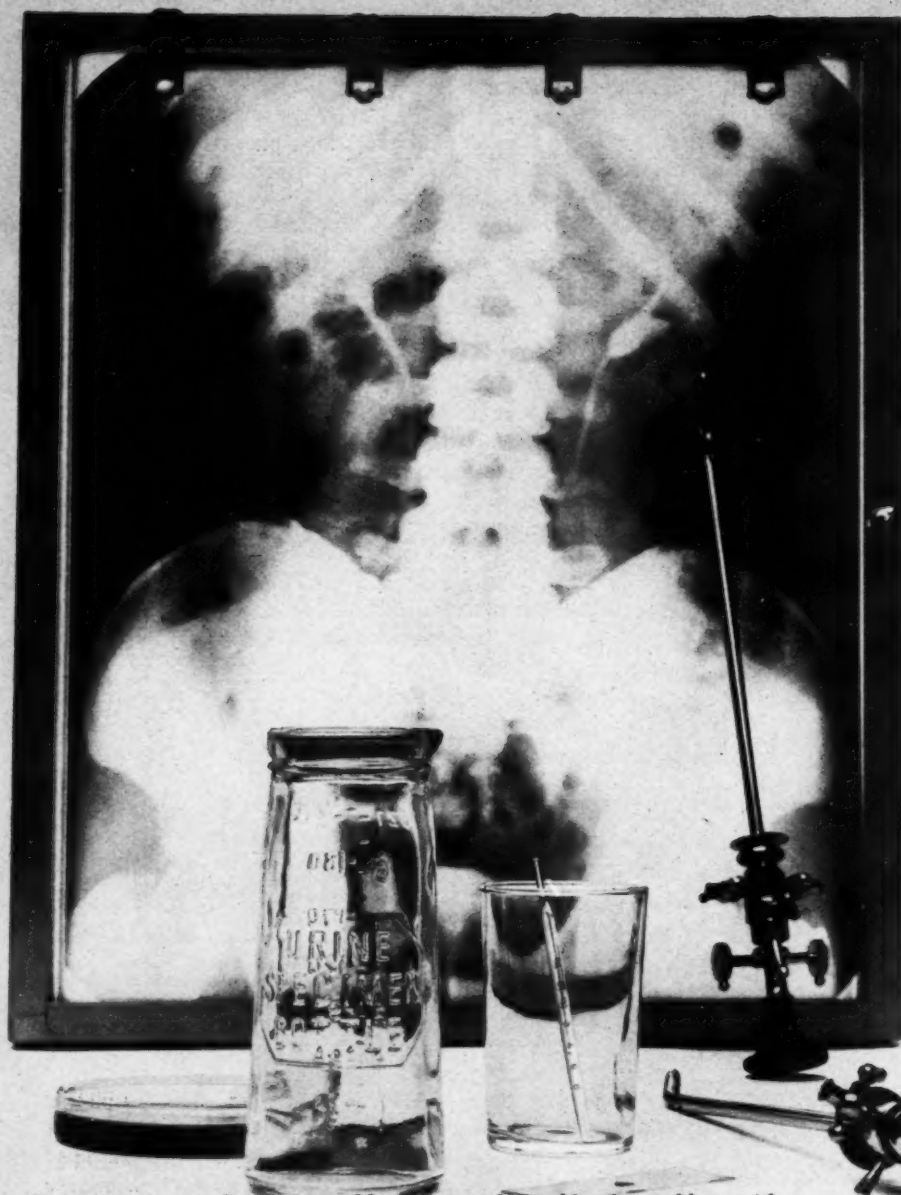
Timbal, Lepetit S.p.A., Milan, Italy, reported that rifomycin B has shown no cross-resistance with other antibiotics. Maffii and Timbal described animal studies which showed that the antibiotic is poorly absorbed when administered orally, produces a certain degree of local irritation after subcutaneous and intramuscular injection, and is excreted in the urine only to a slight degree. Most of the antibiotic is excreted in the bile.

Since the introduction of the antibiotics, Health Information Foundation points out, the over-all death rate from syphilis has dropped from 12 persons per 100,000 population in 1943 to 2.2 in 1958. Nevertheless, an estimated million persons in this country still have the disease.

### ANNOUNCEMENT 1960 ANNUAL MEETING

American Academy of General Practice Category I credit, 12 hours, 1960 annual meet, Scottsdale.

Although the incidence of venereal disease is still high, 30 infants in this country died from congenital syphilis last year, while 3,460 would have died if the 1930 rate had continued, according to Health Information Foundation.



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1. Boger, W. P.; Strickland, C. S., and Gylfe, J. M.: *Antibiotic Med. & Clin. Ther.* 3:378, (Nov.) 1956. 2. Boger, W. P.: *Antibiotics Annual* 1958-1959, New York, Medical Encyclopedia, Inc., 1959, p. 48. 3. Sheth, U. K.; Kulkarni, B. S., and Kamath, P. G.: *Antibiotic Med. & Clin. Ther.* 5:604 (Oct.) 1958. 4. Vinnicombe, J.: *Ibid.* 5:474 (July) 1958. 5. Anderson, P. C., and Wissinger, H. A.: *U. S. Armed Forces M. J.* 10:1051 (Sept.) 1959. 6. Roepke, R. R.; Maren, T. H., and Mayer, E.: *Ann. New York Acad. Sc.* 60:457 (Oct.) 1957.

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# Diagnosis and Treatment of Diseases of the Parathyroid

## GLANDS — PART I

Sherwood E. Feinberg, M.D.

Fort Huachuca, Arizona

**T**HE HISTORY of the parathyroid glands and the profession's realization of their surgical importance represents a fascinating and comparatively young chapter in the book of medical progress. The parathyroids, in less than a hundred years, have become extremely challenging endocrine glands and have taxed the ingenuity of internist and surgeon alike.

Late in the 19th century, the pea sized bodies which had escaped detection for many centuries were well described in Upsala, Sweden, by Ivar Sandstrom.(99, 151) That he, too, was surprised to find a histologically distinct structure in the neck of man is reflected by the following passage from his original paper: "So much the greater was my astonishment therefore when, in the first individual examined I found on both sides at the inferior border of the thyroid gland an organ the size of a small pea, which, judging from its exterior, did not appear to be a lymph gland, or an accessory thyroid gland, and upon histological examination showed a rather peculiar structure."(98)

A number of years were to pass before the parathyroid gland was attacked surgically but there were many contributions in the intervening time.

In 1891, osteitis fibrosa cystica of Von Recklinghausen or osteitis fibrosa cystica multiphasica was first described.(3) The connection between this striking disorder of bone and the parathyroid gland went unrecognized at the time.(110)

In 1901, Loeb recognized the effect of altered concentrations of serum calcium on neuromuscular irritability.(111) Jacob Erdheim, at the turn of the century, reported the first acceptable case of adenoma of the parathyroid. A year later, in 1904, Askanazy linked a parathyroid neoplasm to bone disease and following this time the association of parathyroid enlargement and cystic bone disease began to be appreciated.(110) In 1906, Erdheim described compensatory hyperplasia of the parathyroids in osteomalacia and he felt that the parathyroid changes were compensatory and most likely beneficial. Post mortem examinations in cases of osteomalacia repeatedly described what was felt to be compensatory parathyroid hypertrophy, while autopsies in Von Recklinghausen's disease of bone revealed a single parathyroid adenoma as a constant finding. Because Erdheim said that the parathyroid hyperplasia is secondary in osteomalacia, most continued to think of the parathyroid tumors as secondary and probably of benefit to man. At the time, only a few considered that what was true for osteomalacia might not be true for Von Recklinghausen's disease of bone.(3) Erdheim, in 1907, extirpated the parathyroid glands of rats and discovered that the role of the glands was to control the metabolism of calcium and phosphorus.(99)

Schlagenhauser, in 1915, differed from the majority view and openly wondered why in Von Recklinghausen's disease of bone the parathyroid enlargement involved only one gland



which would be difficult to explain if the hypertrophy were secondary. His observations set the stage for the surgical first of Felix Mandl which was to occur in 1925 but more physiologic advances were made prior to that time. Biedl, in 1916, showed that the parathyroids had an internal secretion by transplanting the parathyroids of a dog into the same animal's spleen and later performing a thyroidectomy. Tetany did not occur until months later when splenectomy was performed and fatal tetany occurred within 24 hours of removal of the spleen.(98) Collip, in 1925, and Hanson, independently, in 1923, reported the isolation of a physiologically active extract of the parathyroid gland, the parathyroid hormone. (50, 79)

Felix Mandl, in 1925, resolved the theoretical controversy which existed due to the differing views of Erdheim and Schlagenhauser.(113) Mandl, in step with the concepts of that period, was not certain whether a parathyroid adenoma was compensatory or whether it actually was the cause of osteitis fibrosa cystica. Mandl had as a patient a 38-year-old man with classical osteitis fibrosa cystica. He gave his patient extracts of parathyroid glands of animals but this was not successful. Again, in line with the views of Erdheim, he transplanted into his patient the parathyroid glands from a man who had just died. This attempt, too, was unsuccessful. Finally, in July of 1925, Mandl operated and removed a parathyroid adenoma from the neck of his 38-year-old patient. Following surgery, the man's bones recalcified and he showed great general improvement. Since this was a heretofore fatal disease, the riddle was solved.

Although Mandl's feat in 1925 was the first successful case of a cervical dissection with the express intent of removal of a parathyroid neoplasm, it should be mentioned that a parathyroid adenoma had been removed in the United States in 1924 by Dr. Charles Richardson of Macon, Georgia. Richardson operated because of a palpable cervical tumor, thought preoperatively to be a thyroid growth, which on removal turned out to be a parathyroid adenoma.(98, 142, 88)

Great strides have been made in the diagnosis and surgical treatment of parathyroid disease since 1925. The criteria for the detection of parathyroid overactivity have been revamped. Historically, a variety of skeletal symptoms and findings: generalized osteitis fibrosa, bone cysts and tumors, pathologic fractures, and other

skeletal disorders were the first recognized indications of parathyroid overactivity.(162) Churchill and Cope, in 1936, recognized the fact that diagnostic emphasis was shifting to cases of nephrolithiasis. They considered cases with bone involvement as "museum pieces" and pointed out that the majority of the cases would be found in patients with urinary stones.(47) Severe hyperparathyroidism without bone disease was first demonstrated in 1937 by Albright, Sulkowitch, and Bloomberg.(10) Tremendous advances have since been made as is evidenced by the fact that cases have been reported without nephrolithiasis or bone disease, and most recently, with only minimal chemical abnormalities.(70)

Hyperparathyroidism can no longer be considered a rare disease. In fact, as of 1953, more than 700 cases of hyperparathyroidism had been reported.(82) All this has been accomplished in less than three decades from the time of Felix Mandl's surgical triumph.

#### PARATHYROID ANATOMY AND EMBRYOLOGY

The parathyroid glands are yellowish-brown bodies, the number and position of which may be variable.(67, 83) The color varies with the amount of fat present. In youth and middle age, the glands are usually yellowish, while in old age they are browner because of loss of fat. The glands may be pink to coffee-brown in the prepubertal period. A superior and an inferior parathyroid are usually present bilaterally, occupying any position from the back of the pharynx to the superior mediastinum. They are about the size of a small pea and usually lie between the posterior aspect of the lateral lobe of the thyroid and the pretracheal lamina of the pretracheal fascia. The parathyroids may lie entirely or partially within the substance of the thyroid gland, this being particularly true of the superior glands, which are then easily removed in thyroidectomy. The anatomy of the inferior parathyroids is more complex than that of the superior, and the inferior glands may lie in intimate relationship to the inferior thyroid arteries and veins; however, their position is variable. The superior and inferior parathyroid glands, as a rule, receive their blood supply from the thyroid vessels. The inferior thyroid artery is the major vessel of supply.(98)

The parathyroid glands, like the thyroid, develop from the pharynx, from the walls of the

third and fourth branchial pouches. They are usually paired and are four in number; right and left parathyroids III derived from the third branchial pouches, and right and left parathyroids IV derived from the fourth pouches. Early in their development, the parathyroids IV become associated with the developing thyroid gland, and as the thyroid gland reaches its definitive position in the neck these parathyroids tend to remain associated with the upper poles of the thyroid and they are known as the superior parathyroids.

The parathyroids III are associated in the early stages of their development with the thymus and they tend to migrate into the neck with the thymus. Usually, as the thymus passes the thyroid to proceed on downward into the thorax the parathyroids III become detached from the thymus and associated more or less closely with the lower pole of the thyroid gland, hence they are frequently designated as the inferior parathyroid glands.

The region in which a given gland may be found is supposedly predictable. This furnishes the purely anatomical basis for the surgery of hyperparathyroidism. (48, 52, 176) That the supposed ease and certainty with which a parathyroid may be identified has been overemphasized has been indicated by Hayes Martin. (114)

The migration of the superior parathyroid gland is not great during the developmental stage. On the basis of embryological migration the gland should lie between the upper level of the larynx and the lower pole of the thyroid gland in the space bounded anteriorly by the deep layer of the middle cervical fascia and posteriorly by the prevertebral fascia. The gland is situated well posteriorly and may lie on the pharynx or esophagus rather than the thyroid gland, although, as has been indicated, it may be entirely or partially situated within the thyroid substance. The usual position of the gland is not near the superior pole of the thyroid, but at about the junction of the middle and upper thirds of the lobe. The superior parathyroid is found more easily than the inferior gland due to its limited embryological migration. It is important to note that the superior gland lies in a plane dorsal to the recurrent nerve and inferior thyroid artery. The inferior gland, which originates above the superior gland, migrates caudally along with the thymus and lateral to the developing superior parathyroid and thyroid

glands. It may be carried completely into the anterior superior part of the mediastinum along with the developing thymus. The inferior gland lies in a more ventral plane than the superior and is usually found anterior to the recurrent laryngeal nerve and inferior thyroid artery. The inferior parathyroid may be found in the cervical fascia at any level from the upper border of the larynx to well into the mediastinum. The inferior parathyroids commonly lie below the level of the thyroid gland. The usual locations of the inferior gland are anterior to, but near the inferior thyroid artery on the inferoposterolateral surface of the thyroid and also caudad to the thyroid in relationship to the inferior thyroid veins.

Besides their positional variability on an embryological basis, the parathyroids, especially when enlarged, may be displaced caudally by the same forces that displace low lying thyroid adenomata into the thorax. If the parathyroid is situated well posteriorly, the displacement is toward, or into the posterior superior mediastinum, and if situated more anteriorly it may be displaced toward or into the anterior superior mediastinum. An inferior gland may be displaced either into the anterior superior or posterior superior mediastinum, depending on its position before displacement.

As previously mentioned, the parathyroids usually receive their blood supply from the thyroid vessels; however, when a gland develops in the mediastinum it may get its blood supply from any local vessel. Parathyroids which develop in the neck and are subsequently displaced into the mediastinum remain attached to the thyroid vessels, thus the displaced gland may be detected by dissecting the vascular pedicle into the thorax. All parathyroids in the posterior superior mediastinum are said to have pedicles, while those in the anterior superior mediastinum may or may not have pedicles. Since adenomas in the posterior superior mediastinum always have pedicles and also because of the embryological fact that a normal parathyroid gland is never found in the posterior mediastinum, one may infer that there is such a phenomenon as mechanical displacement. (52, 98)

An estimated 2 to 3% of parathyroid adenomas have an intrathyroid location. (25) Parathyroid tissue may also occur within the substance of the thymus. Brewer was the first to report parathyroid tissue in the thymus in adults although

as indicated in Brewer's report, Erdheim had earlier reported parathyroid tissue in the thymus of cretins and Duperie in routine examination of the thymus of infants found four parathyroid inclusions in one hundred cases examined.(33) In 322 parathyroid adenomas presented by Norris, 9 were intrathymic.(127)

Reported figures of parathyroid adenomas that are completely mediastinal vary from 7 to 17%.(23, 52, 127) Parathyroids may be found in other unusual positions in the neck either due to atypical embryogenesis or to mechanical displacement.(98)

The surgical significance of atypical parathyroid locations will be discussed in another section.

#### INCIDENCE OF HYPERPARATHYROIDISM AND DIAGNOSTIC CLUES

The following is the clinical classification of hyperparathyroidism according to Albright:(4)

- (1) Renal disease only.
- (2) Bone disease only.
- (3) Both renal and bone disease.
- (4) Neither renal nor bone disease.

The last few years have demonstrated beyond doubt that all four types occur; however, the incidence of each is changing probably due to increased awareness of hyperparathyroidism by physicians. Now the diagnosis is being made before major metabolic abnormalities have occurred.

Primary hyperparathyroidism may occur at any age and cases have been reported from the period of early childhood to senescence. Anspach and Clifton have reported a case of a probable parathyroid adenoma at the age of 3 months; however, histologic proof of hyperparathyroidism was not obtained.(13) Crawford, Stefanelli, and Alvarez have reported a well documented case of a parathyroid adenoma in a two-year-old child.(54) The maximum age incidence is between 30 and 60 years.(110) Primary hyperparathyroidism occurs approximately three times more often in females than in males; however, the reason for this sex predilection is not readily apparent. This disorder may run a protracted clinical course and indeed there are numerous cases on record of people having had symptoms of hyperparathyroidism (usually renal colic) for periods of 30 years or more.(22, 28, 85) That hormonal factors may be of importance is indi-

cated by an increase in the female incidence of hyperparathyroidism after the menopause.(127, 180)

Symptoms due to elevated serum calcium may cause a confusing clinical picture. These may include chronic constipation, fatigue, muscular weakness, polyuria and polydipsia, nausea and vomiting, and symptoms associated with progressive renal insufficiency if the kidneys have sustained damage.(110)

Hyperparathyroidism may be associated with minimal or marked gastrointestinal symptoms. The fourth confirmed case of hyperparathyroidism (1929) had attacks of severe abdominal pain and vomiting which occurred every few weeks prior to parathyroidectomy.(31) Symptoms such as nausea, vomiting, anorexia, and epigastric pain have been recorded by a number of observers.(9, 74, 86, 130) The coexistence of peptic ulcer and hyperparathyroidism is well known. It is thought that the occurrence of peptic ulcer is favored by prolonged hypercalcemia and also by the action of parathormone on the mucoprotein of the gastrointestinal mucosa.(62, 1952) It is felt that hypercalcemia is the principal cause of the gastrointestinal symptoms. Increased serum calcium ion concentration in sympathetic ganglia impedes transmission of afferent stimuli and diminishes efferent discharges in the presence of a constant amount of perfusing acetylcholine.(34) The effect of calcium ion concentration on sympathetic ganglia and the effect of hypercalcemia on reducing neuromuscular irritability supposedly leads to decreased tone of the gastrointestinal tract. Peptic ulcer is thought to be 11 times more common in those with hyperparathyroidism.(21) In the Mayo Clinic series, 24% of patients with proved hyperparathyroidism had at the time of examination, or had had in the past, objective evidence of peptic ulcer or had had operations on the stomach, presumably because of ulcer. An additional 15 to 20% of patients had some ulcer-like symptoms but an ulcer had never been proved.(22) A report from the Presbyterian Hospital in New York gives similar figures. They reported that 16 of 45 patients with hyperparathyroidism had prominent gastrointestinal symptoms. Following parathyroidectomy, the gastrointestinal complaints subsided in 11 of the 16 patients.(162)

The most frequent complication of hyperparathyroidism is precipitation of calcium salts



in the urinary tract. This results from the associated hypercalcuria with the formation of calcium phosphate stones in alkaline urine and calcium oxalate stones in acid urine.(1) Roughly 5% of all patients with kidney stones have hyperparathyroidism.(9, 19) Seven per cent of Goldman's patients with nephrolithiasis had parathyroid adenomas.(70) In the case of renal involvement due to hyperparathyroidism, calcium is deposited not only in the parenchyma of the kidney but also in the collecting system so that precipitation of calcium may be found anywhere along the urinary tract such as in the calices, pelvis, ureters or urinary bladder. It is well known that calcification of the renal parenchyma results in the gradual impairment of renal function.(110)

In the early days of parathyroid surgery, bone disease was usually the presenting finding and this called attention to the possibility of hyperparathyroidism. About one-third of patients with hyperparathyroidism are said to have sufficient bone abnormality to make the roentgen diagnosis possible.(135) The incidence of skeletal involvement would appear to be steadily decreasing.(70) Symptoms and signs related to the skeletal system may include pain of bones and joints, cystic areas in the long bones and skull, spontaneous fractures, kyphosis, scoliosis, thoracic deformities, deformities of the long bones, and gait abnormalities.(110)

Hyperparathyroidism may present as psychiatric illness(28, 65) and psychiatric symptoms may disappear after the successful removal of a parathyroid adenoma.(12)

Peripheral vascular insufficiency due to arterial calcification may be present as a prominent manifestation of parathyroid hyperfunction. (12, 28, 145)

Recently, attention has been called to the occurrence of pancreatitis as the presenting symptom of previously undiagnosed hyperparathyroidism.(53) It has been suggested that patients with a history of pancreatitis should be screened for hyperparathyroidism. The mechanism thought to be involved when pancreatitis is observed with hyperparathyroidism is the deposition of calcium in the pancreatic ducts with subsequent ductal obstruction.(53) A number of observers have reported pancreatic calculosis associated with hyperparathyroidism; however, it remains to be seen whether the routine screen-

ing of patients with pancreatitis will be rewarding.(115, 146, 158)

#### SECONDARY HYPERPARATHYROIDISM

This condition implies that there is parathyroid hyperfunction secondary to increased demand for more parathyroid hormone.(154) Secondary diffuse hyperplasia may result from calcium deprivation, rickets, osteomalacia, biliary fistulae, chronic jaundice, pregnancy and lactation, multiple myeloma, and chronic renal disease.(160) Chronic renal insufficiency is the usual and most important causative factor in the genesis of the secondary form of hyperparathyroidism.(89)

The initial mechanism in individuals with impaired renal function is a retention of phosphate ion. The rise in serum phosphate depresses the calcium ion to low levels and the parathyroids exhibit a compensatory overactivity in response to the lowered serum calcium.(52) Bone changes in secondary hyperparathyroidism may mimic the generalized osteitis fibrosa of primary hyperparathyroidism; however, bone cysts or giant cell tumors are not seen.(160)

It may be relatively easy to distinguish the primary from the secondary form of hyperparathyroidism if the primary form has not progressed to the point of renal insufficiency. If secondary renal involvement has occurred due to long standing primary hyperparathyroidism, the differential diagnosis may be an impossible one short of surgical exploration and histological examination of the involved glands.

The differential diagnosis of the two conditions is of extreme importance since surgical exploration offers nothing to the individual with secondary parathyroid hyperfunction and it is the treatment of choice in a situation of primary hyperparathyroidism. Cope has reported a case in which autopsy examination revealed a parathyroid adenoma in a patient thought to have secondary hyperparathyroidism. This patient had been denied surgical exploration because of the clinical impression of secondary parathyroid hyperfunction.(98) It is thus abundantly apparent that the differentiation of these two conditions which are therapeutic opposites may be extremely difficult.

The pathological distinction between primary hyperplasia, parathyroid adenoma, and secondary hyperplasia should not be a problem. This subject is discussed in the section on parathyroid pathology.



### ACUTE HYPERPARATHYROIDISM (HYPER-HYPERPARATHYROIDISM)

Acute hyperparathyroidism or parathyroid crisis appears to be a very uncommon disorder. As of 1956, only fifteen cases had been reported in the world literature.(97) It is quite likely that this condition is more common than the number of reported cases would indicate because the diagnosis is difficult.

The first case of probable parathyroid hormone poisoning was reported by Dawson and Struthers in 1923.(129) This case was highly suggestive but lacked confirmatory data. The case of Hanes, in 1939, in which death occurred, is regarded as the first proved case of parathyrotoxicosis.(78)

Acute poisoning by parathyroid hormone is a well known entity in experimental animals.(158) The mechanism of death in acute parathyroid hormone intoxication is incompletely understood. Causes advanced have been: (a) marked diuresis with resultant dehydration and renal failure; (b) a combination of electrolyte loss and a failure of the brain to utilize glucose in the absence of diffusible phosphorus; and (c) renal inability to filter phosphorus at high calcium levels with precipitation of calcium in areas of localized tissue alkalinity. In support of the latter is the fact that widespread calcinosis occurs in parathyrotoxicosis with especially severe involvement of the kidney.(174)

We are accustomed to thinking of hyperparathyroidism as a chronic disease but it is well to remember that it may be an acute and often fatal disease.(174) Waife gives the following points to consider in the diagnosis of this disorder: when a patient with duodenal ulcer shows intractable vomiting in the absence of pylorospasm or gastric retention; when the vomiting and epigastric pain is aggravated by a high calcium, high phosphorous or alkali intake; when there is marked muscle weakness and lethargy; and when there is terminal uremia with polyuria and polydipsia.(97, 174) Treatment for peptic ulcer in a patient with hyperparathyroidism by administration of milk and alkalis may precipitate parathyrotoxicosis.(145, 146, 147)

It is clear that the recognition of this disorder may represent a difficult problem. The treatment of choice is emergency parathyroidectomy. Of the fifteen cases reported, only two have been treated successfully by emergency para-

thyroidectomy.(97, 153)

### PARATHYROID CARCINOMA

True cases of carcinoma of the parathyroid glands are extremely uncommon.(110) Although more have been reported, as of 1956 there were only twenty-three valid cases.(98) The discrepancy between the number reported and the number of acceptable cases must be explained. The major problem in the classification of cases is that there is extreme difficulty in making a histological distinction between a benign and a malignant tumor. According to Black, the cytology of carcinomas known to have metastasized is so similar to that of clinically benign adenomas that the distinction between benign and malignant tumors is uncertain from a histologic standpoint.(24) He feels, however, that the distinction can be made with some degree of certainty if both gross and microscopic features are considered. It is also of interest that the usual cytologic criteria for the diagnosis of malignancy apparently are of questionable value in the case of parathyroid carcinoma. A series of 14 cases of primary hyperparathyroidism at the Mayo Clinic up to 1942 were reported by Pemberton and Alexander and a diagnosis of carcinoma was made in 13 of these cases and a diagnosis of adenoma in the 14th case. The diagnosis of malignancy was made purely on cytological evidence and it is questionable whether all these represented actual carcinomas since there was no gross evidence of malignancy, no distant metastases, and the patients all thrived following surgery(98, 130) A case report of a malignant course of a microscopically benign parathyroid tumor in which post mortem examination revealed metastatic parathyroid tissue in both lungs lends support to the feeling that the present histological criteria for the diagnosis of parathyroid malignancy are not adequate.(101) It would seem more wise in our present state of knowledge to include under the heading of malignancy only those cases in which after removal of the primary parathyroid tumor there has been either a local recurrence of the neoplasm, a spread of the growth so that contiguous structures have become involved, or metastases to distant organs and tissues. If the aforementioned criteria are adhered to, the number of acceptable cases will be scant.(110)

Parathyroid carcinoma causes an estimated 1 to 2% of hyperparathyroidism.(24) The first

acceptable case of parathyroid carcinoma was reported in 1909 by DeQuervain.(57, 98, 110, 126) DeQuervain's case report described invasion of the jugular vein, invasion of the sternocleidomastoid muscle, local recurrence, and pulmonary metastases. Many sites of metastases may occur. An extremely rare situation is a mediastinal parathyroid carcinoma with metastases. This case, too, was first diagnosed as a parathyroid adenoma from its histological characteristics and showed evidence of malignancy several years later by local and distant metastases.(178)

The mechanism of death in parathyroid carcinoma with metastases is usually uncontrollable hyperparathyroidism.(24) There is some question in the literature on the acceptance of non-functioning parathyroid carcinoma. Some investigators hold the view that nonfunctional parathyroid carcinoma is a questionable entity,(41, 120) while others feel that functional activity is not necessary for the diagnosis of parathyroid carcinoma.(126)

The treatment of parathyroid carcinoma is surgical and since the probable route of metastasis is to the regional lymph nodes, a radical neck dissection should be done.(98) Janelli wisely reminds that the lesion is rare and that the diagnosis should be firmly established before such an extensive operative course is undertaken.(98) In view of the confusing histological characteristics of parathyroid carcinoma, it would, therefore, appear prudent to require evidence of obvious local spread at time of cervical exploration or later clinical recurrence of the parathyroid tumor before embarking upon a radical neck dissection. Radiation therapy has been used for recurrences, but has not altered the disease process.(85, 98, 126)

#### DIAGNOSTIC CRITERIA IN HYPERPARATHYROIDISM

The standards used for the diagnosis of hyperparathyroidism have undergone great changes in the last three decades.(70) Bone disease was the chief manifestation of hyperparathyroidism in the time of Mandl but as parathyroid surgery evolved bone lesions became less frequent and the diagnostic emphasis shifted to individuals with renal stones.(47) More recently, attention has been directed to the gastrointestinal aspects of hyperparathyroidism. St. Goar indicates this trend as follows: "Hyperparathyroidism, which

has been popularly thought of by medical men as a disease of stones and bones, might be recognized both earlier and more frequently if it were widely regarded as a disease of stones, bones, and abdominal groans."(162) As time has passed, cases of hyperparathyroidism have been unearthed not only without evidence of bone or renal involvement but also with seemingly insignificant chemical abnormalities.(70) It should be emphasized, though, that the diagnosis of hyperparathyroidism usually depends upon a complication of the primary metabolic disorder and it is the unusual case in which the diagnosis is made in the absence of bone disease, urinary lithiasis, or peptic ulceration.

A discussion of the tests utilized in an attempt to establish the diagnosis of hyperparathyroidism follows:

The determination of serum parathyroid hormone concentration would, from a theoretical standpoint, be an excellent method for making a diagnosis of parathyroid hyperfunction; however, there is no direct method of assaying parathormone in the blood. Thus, one must rely on indirect tests which reflect metabolic changes resulting from an overproduction of parathyroid hormone.(154)

An elevated serum calcium is probably the most important diagnostic finding of this disorder.(70) It should be emphasized, however, that the elevation may be minimal or absent. In general, the serum calcium determination is good as a screening test and a value over 11 mg. % is highly suspect.(35) The normal value for blood calcium is 10.0 mg. % plus or minus 1 mgm. %.(154) It is also necessary to know the value of total serum proteins in evaluating a case of suspected hyperparathyroidism since a portion of total serum calcium is combined with protein in the form of calcium proteinate. If proteins are low, the serum calcium might be reported as an erroneous normal value. A nomogram is available to evaluate the serum ionized calcium value in relation to the serum protein level.(117) Though normal serum calcium makes the diagnosis quite unlikely, hyperparathyroidism may occur with a perfectly normal serum calcium value. (64, 116) Goldman feels that one calcium determination is not sufficient if the diagnosis is highly suspect.(69) It is of interest to review the range of serum calcium values in the extensive series of cases reported from the Mayo Clinic by Black

and Zimmer.(27) The values for serum calcium in the series varied from 10.1 to 18.4 mg. %. Slight elevations were far more common than extreme deviations from the normal. The value for calcium was less than 11 mg. in 13% of cases and less than 12 mg. in 54% of cases. At the other extreme, values of more than 14 mg. were found in less than 12% of cases. When considering the value of calcium determinations in the detection of this disorder, we must keep in mind the fact that there are many other conditions which may give rise to hypercalcemia. Brenizer lists several important conditions which should be differentiated.(32) Metastatic lesions in bone may produce hypercalcemia, especially following steroid hormone therapy. Though the chemical findings may simulate hyperparathyroidism, the radiologic picture of sharply defined bone lesions in generally normal bone should serve to confirm the diagnosis of metastases. Multiple myeloma and sarcoidosis may produce both hypercalcemia and bone lesions. Myeloma ordinarily produces sharp, punched out lesions in the skull and one may find Bence-Jones proteinuria and plasmacytosis in the bone marrow smear. Boeck's sarcoid may closely resemble hyperparathyroidism but can usually be recognized by associated lymphadenopathy, hyperproteinemia, suggestive pulmonary lesions, a normal serum phosphorus, and sharply outlined cysts in the phalanges of the fingers. Hypervitaminosis D may cause hypercalcemia. The so-called milk alkali syndrome of Burnett may be associated with hypercalcemia and may be confused with hyperparathyroidism. The Burnett syndrome will be discussed in another portion of this paper. Patients who are immobilized by fractures or paralysis may show most of the blood and urinary findings of hyperparathyroidism. This is thought to be due to a rapidly developing osteoporosis of disuse with rapid mobilization of calcium.

Another good, but not infallible, screening test for hyperparathyroidism is the serum phosphorus level. A serum phosphorus level of less than 3 mg. % should focus attention on the possibility of primary hyperparathyroidism.(35, 138) The level of serum phosphorus has been of inestimable aid to some investigators in the detection of parathyroid hyperfunction while others have not been impressed with its usefulness. Bogdanoff feels that the demonstration of hypophosphatemia is more important than the

serum calcium level in making the diagnosis of hyperparathyroidism.(28) It would appear that the concept that serum phosphate levels must be depressed for a diagnosis of hyperparathyroidism is changing since many proved cases of hyperparathyroidism have been associated with normal serum phosphate values. Sixty per cent of Goldman's cases of hyperparathyroidism seen during the past two years had serum phosphate levels in the range of normal.(70) This is in marked contrast to the early experience with this disease when it was thought that hyperparathyroidism was associated with a low serum phosphate level unless renal insufficiency supervened. The mechanism of hypophosphatemia in this disorder may be explained as follows: parathyroid hormone increases the renal excretion of phosphate. At the same time, it mobilizes calcium phosphate from the bones. However, the excessive quantities of phosphate excreted in the urine are so large that notwithstanding the increased calcium phosphate transport to the blood, the serum phosphate decreases.(159) On the other hand, normophosphatemia in cases of surgically proved hyperparathyroidism should be explained. Theories advanced are that increased dietary intake of phosphorus may compensate for the renal phosphate leak and that increased breakdown of osseous and muscle tissue may cause a release of endogenous phosphate stores.(70, 141) In children with hyperparathyroidism, a 1 to 2 mg. % allowance must be made for their normally higher serum phosphorus values.(154)

Hypercalcinuria as determined by quantitative determinations of 24-hour urinary calcium excretions may help to establish the diagnosis. The patient should be maintained on the low calcium diet of Bauer and Aub(15) for several days before doing urine studies. The calcium intake should be restricted to 125 mg. per day for the performance of this study. A normal individual excretes less than 100 mg. of calcium daily under these dietary restrictions. A value over 150 mg. per day is suspicious and a value over 200 mg. per day is highly suggestive of hyperparathyroidism.(15) The nonparathyroid causes of hypercalcinuria must be kept in mind.

The Sulkowitch test provides a rapid qualitative screening method for the presence or absence of excessive urinary calcium excretion. This test should be regarded as a rough index of calcium excretion since false negatives and



false positives have been reported.(71)

Determination of the spinal fluid calcium may be of value in cases of hypercalcemia. This test may be used to rule out hyperparathyroidism in the presence of hypercalcemia. In conditions not due to hyperparathyroidism, the spinal fluid calcium is elevated, but in hyperparathyroidism there is no elevation.(133) The normal value is 5 mg. %.

The phosphate deprivation test may be of some use. It is felt by some that the American diet is fairly high in phosphorus content and thus may mask a high serum calcium value. By restriction of phosphate intake to about 500 mg. per day, a falsely normal serum calcium level may rise to hypercalcemic levels in cases of parathyroid hyperfunction.(45)

The calcium tolerance test is one of the more promising methods for the detection of hyperparathyroidism. The intravenous administration of calcium sufficient to produce hypercalcemic levels causes an elevation in serum phosphorus of over 1 mg. % in the normal individual. It also causes a reduction of 20% to 60% in urinary phosphorus excretion. However, these determinations may be unreliable. In patients with parathyroid adenomas the increase in serum phosphorus during the administration of calcium is less than 1 mg. % and the decrease in urinary phosphorus excretion is usually less than 20%. Hypercalcemia apparently results in a depression of parathormone excretion and the patient with hyperparathyroidism has a less marked depression of parathormone secretion than the normal individual(35, 45, 94). The physiologic basis for this test dates back as far as 1924 when it was noted that serum phosphate levels rose after calcium chloride infusions in the dog.(150) In 1950, a decreased urinary phosphate excretion was noted following calcium gluconate infusions in man,(18) and Howard, Hopkins, and Connor, in 1952, introduced the calcium tolerance test for the study of parathyroid abnormalities.(94) The technique of the test is well described by Chambers, et al.(45) This test was positive in 11 of 17 patients with proved hyperparathyroidism reported by Goldman, Gordan, and Chambers in 1957.(70) It is thus readily apparent that false negatives may occur.

The most promising test would appear to be the tubular reabsorption of phosphate.(70) The derivation of the formula is quite complicated

and the reader is referred to the Journal of Clinical Endocrinology, November 1956, for further details.(45) The renal tubules normally reabsorb 80 to 90% of the phosphate filtered through the glomeruli; however, this value is considerably reduced in cases of hyperparathyroidism.(70) Chambers, et al., noted an average TRP of 58% in proved cases of hyperparathyroidism(45). It is well to be aware of several shortcomings of this test. It is not applicable in the presence of uremia since the test is dependent on creatinine clearance as an index of glomerular filtration rate.(35) There are several other conditions which may give a positive TRP; they are osteomalacia, sarcoidosis, Debre-de Toni-Fanconi Syndrome (phosphate diabetes) and idiopathic renal phosphate leak. Another consideration is that normal subjects on a low phosphate diet will exhibit elevated TRP levels and the same phenomenon will occur in those with hyperparathyroidism. Apparently, a period of phosphate deprivation causes an obligatory increase of phosphate reabsorption by the tubules. Thus, it would be unwise, in a patient in whom hyperparathyroidism is suspect, to do a TRP immediately following a phosphate deprivation test. Measurement of the TRP is fairly simple in spite of the complicated mathematics which enter into the test. It is necessary to make simultaneous determinations of phosphate and creatinine concentrations in the blood and urine. To determine the amount of phosphate reabsorbed by the tubules, it is necessary to measure the quantity of phosphate filtered by the glomeruli and to subtract the amount found in the urine. The quantity of phosphate filtered equals the volume of plasma filtered per minute, (glomerular filtration rate, determined by measurement of the creatinine clearance), multiplied by the serum phosphate concentration. The measurement of creatinine clearance is ordinarily a complicated project. However, the same time and volume of urine are used for the urinary excretion of phosphate. In this way, the timing and urine volume cancel out so that the final formula requires neither figure. The only figures needed are the serum (S) and urine (U) concentrations of phosphate (P) and creatinine (C) to calculate the TRP by the formula:

$$TRP = 1 - \frac{UP \times SC}{UC \times SP}$$

It is convenient to use mg% for each



of the symbols.

The urine should be collected from 8:00 P.M. to 8:00 A.M. At 8:00 A.M. one should obtain the serum creatinine and phosphorus and run simultaneous urine creatinine and phosphorus on the sample that has been collected in the preceding 12-hour period. It would seem that the TRP is a better diagnostic test than the calcium loading test. The TRP was definitely positive in 22 of Goldman's last 23 cases with surgically proved hyperparathyroidism.(70) It was positive in 15 of the last 16 cases of hyperparathyroidism at the Duke University Hospital.(12) The simplicity of the test and its apparent accuracy would suggest that it should be used as a screening test before the more complicated procedures are undertaken. Its worth is not restricted to the preoperative period since it may serve as an excellent indication of surgical correction of hyperparathyroidism. Following successful removal of a parathyroid adenoma the TRP should rise to nearly 100%, probably due to a temporary hypoparathyroidism.(70) (My personal experiences with the TRP test have not been nearly as glowing as the literature would indicate.)

Recently, radioactive strontium has been used for the diagnosis of hyperparathyroidism. The technique and results will be published in the near future.(68)

#### IN THREE PARTS — CONTINUED

### "AFTER MASTECTOMY"

**W**E ARE HAPPY to bring to your attention the fact that the Professional Education film for physicians and nurses, "After Mastectomy," made by the Oregon Division of the American Cancer Society and distributed through this office, was awarded first prize in the category of Professional Films for Allied Medical Professions at the American Film Festival held in New York in April, 1959.

(Available — The Arizona Division, American Cancer Society, Phoenix, Ariz.)

Bureau of Labor Statistics (July, 1959): "In 1933 it required four hours and 48 minutes of work to pay for average M.D. office visit. . . . Today it requires only one hour and 42 minutes."

### MD DESCRIBES UNION DECISION

Recognition of the right of the individual to select his own physician was a basic factor in the decision by a Chicago labor union to abandon two closed panel clinics earlier this year.

Dr. Charles E. Thompson, medical consultant for Chicago Truck Drivers, Chauffeurs and Helpers Union, Local 705, (Ind.), said trustees of the union's health and welfare fund adopted the "free choice" concept as "the best way to provide medical and surgical services and uphold one of our most important freedoms."

Writing in *The Quarterly Review*, the union's publication, Dr. Thompson said America's concept of government is one in which people are governed by elected representatives while maintaining certain individual freedoms in regulating their own conduct.

The freedom of the individual to select his own physician is one of the real freedoms individuals have, he said.

The union closed the six-year-old clinics after deciding that the closed panel method of providing medical care "is antiquated" (*AMA News*.)

Physicians at Johns Hopkins Medical School have increased dogs' excretion of strontium isotopes from five to twenty fold by injecting them with non-toxic doses of sulfates.

If man responds as do dogs and laboratory animals, the disastrous effects of radioactive strontium in atomic ash may be counteracted with sulfates.

### FOR INFORMATION ON OPPORTUNITIES IN THE FIELD OF INDUSTRIAL MEDICINE, CONTACT:

Harold J. Mills, M.D., Phelps Dodge Hospital, Ajo, Ariz.

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Charles B. Huestis, M.D., Box 928, Hayden, Ariz.

Elvie B. Jolley, M.D., Copper Queen Hospital, Bisbee, Ariz.

H. W. Finke, M.D., Magma Copper Company Hospital, Superior, Ariz.

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# Squibb Announces Chemipen

Squibb Alpha-Phenoxymethyl Penicillin Potassium

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As a pioneer and leader in penicillin therapy for more than a decade, Squibb is pleased to make Chemipen, a new chemically improved oral penicillin, available for clinical use.

With Chemipen it becomes possible as well as convenient for the physician to achieve and maintain higher blood levels—with greater speed—than those produced with comparable therapeutic doses of potassium penicillin V. In fact, Chemipen is shown to have a 2:1 superiority in producing peak blood levels over potassium penicillin V.\*

Extreme solubility may contribute to the higher blood levels that are so notable with Chemipen.\* Equally notable is the remarkable resistance to acid decomposition (Chemipen is stable at 37°C. at pH 2 to pH 3), which in turn makes possible the convenience of oral treatment.

And the economy for your patients will be of particular interest—Chemipen costs no more than comparable penicillin V preparations.

**Dosage:** Doses of 125 mg. (200,000 u.) or 250 mg. (400,000 u.), t.i.d., depending on the severity of the infection. The usual precautions must be carefully observed with Chemipen, as with all penicillins. Detailed information is available on request from the Professional Service Department.

**Supply:** Chemipen Tablets of 125 mg. (200,000 u.) and 250 mg. (400,000 u.), bottles of 24 tablets. Chemipen Syrup (cherry-mint flavored, nonalcoholic), 125 mg. per 5 cc., 60 cc. bottles.

\*Knudsen, E. T., and Rolinson, G. N.: *Lancet* 2:1105 (Dec. 19) 1959. \*In vitro in a serum medium.

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# Editorial

## THE AMERICAN MEDICAL EDUCATION FOUNDATION

Interest among the Doctors of Medicine in the United States in financial aid to our medical schools has shown an ever increasing trend since the American Medical Education Foundation was conceived and founded in 1950. The vast deficits created over the years by soaring costs, coupled with an ever-increasing demand upon available resources had become more critical with each succeeding year. Since 1950 the Foundation has gathered and distributed to the approved medical schools over \$7,000,000. This has been made possible only by the activities of county and state medical organizations, the Woman's Auxiliary and the interest of individual physicians. This money has been distributed each year in the form of unrestricted grants.

Private endowments to schools of higher education have been decreasing over the years. Support from the Federal Government, except for one-time building grants, has seemed unwise. Industry has become aware of the needs

of the medical schools and is helping to meet the problem through the National Fund for Medical Education. In the final analysis, however, it is the physician who must give generously to help train the doctors of tomorrow.

Our medical schools are training 29,473 medical students; graduating approximately 7,000 new doctors of medicine each year; instructing 64,000 dental, pharmacy, technical and allied students; providing short courses for medical specialists and practitioners, family doctors, various health officers and hospital staff members; furnishing free medical care to approximately 2½ million people annually; conducting research projects for corporations, hospitals, foundations and government agencies totalling nearly \$75,000,000 annually and publishing the most recent medical findings through journals, books, newspapers and magazines.

Have you done your best?

H.W.K.

## ARIZONA MEDICINE

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The Editor sincerely solicits contributions of scientific articles for publication in ARIZONA MEDICINE. All such contributions are greatly appreciated. All will be given equal consideration.

Certain general rules must be followed, however, and the Editor therefore respectfully submits the following suggestions to authors and contributors:

1. Follow the general rules of good English, especially with regard to construction, diction, spelling, and punctuation.
2. Be guided by the general rules of medical writing as followed by the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
3. Be brief, even while being thorough and complete. Avoid unnecessary words. Try to limit the article to 1500 words.
4. Read and re-read the manuscript several times to correct it, especially for spelling and punctuation.
5. Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.
6. Articles for publication should have been read before a controversial body, e.g., a hospital staff meeting, or a county medical society meeting.
7. Exclusive Publication - Articles are accepted for publication on condition that they are contributed solely to this Journal. Ordinarily contributors will be notified within 60 days if a manuscript is accepted for publication. Every effort will be made to return unused manuscripts.
8. Illustrations - Ordinarily publications of 2 or 3 illustrations accompanying an article will be paid for by Arizona Medicine. Any number beyond this will have to be paid for by the author.
9. Reprints - Reprints must be paid for by the author at established standard rates.

(The opinions expressed in the original contributions do not necessarily express the opinion of the Editorial Board.)

## REDUCE YOUR RATES!

The letter which is reproduced below should be read by all. It has far reaching implications which vitally affect every physician.

Tucson, Arizona  
November 7, 1959

Dr. Dermont Melick  
President of Arizona Medical Association  
Suite 1021, Central Towers, North  
2727 North Central Avenue  
Phoenix, Arizona  
Dear Dr. Melick:

The Southern Arizona Retired Teachers' Association requests the Arizona Medical Association give serious consideration to reduced medical rates for retired teachers.

You are well aware of the spiralling cost of living in the last decade. Teachers' retirement pay has not increased in the same ratio, thus making a real hardship on those of us needing medical care. Quoting from the July issue of the National Retired Teachers News Bulletin — "The medical profession has, of course, been aware of this burden of inflated medical costs, and we commend the American Medical Association, and particularly the California Medical Association for their recent stand on doctor's fees. They have recommended to all member physicians that they charge their patient over sixty-five lower fees." The California Medical Association has actually established this at sixty per cent of their regular fee schedule as of July 1, 1959.

Your own Dr. Blasingame of the American Medical Association made the suggestion that physicians agree to accept 60% of their normal fee for persons over sixty-five with modest incomes.

We sincerely hope your association will seriously consider the important issue which will so vitally affect the welfare of retired teachers.

Very truly yours,  
(Mrs.) Osa Zinn  
President of Southern Arizona  
Retired Teachers Association

2432 East Mabel  
Tucson, Arizona

This letter exemplifies the thinking of many who have been beguiled into believing that doctors' and their fees are virtually the sole cause of the present economic injustices — it is inferred that if doctors did not charge each

separate segment of society as much as they do, then the economy would be sound.

Mrs. Zinn's cry that — "Teachers' retirement pay has not increased in the same ratio (as the spiralling cost of living) thus making a real hardship on those of us needing medical care" — can equally be applied to Physicians, because our fees have also not kept up with the rise of the cost of living index.

Mrs. Zinn is unaware of the fact that doctors' fees have only risen 84% while the cost of the basic essential — food — has gone up 151%. How does she and others except the doctor to be able to bear the burden of economic equalization? It cannot be done.

Mrs. Zinn has not been properly informed that 97% of all doctors have in the past, in the present and will in the future, make satisfactory fee adjustments in accordance with the financial needs of the individual, even to rendering absolutely free medical service.

For us to make across-the-board reduction for teachers or others — would be entirely unjust fees for any segment of society — retired teachers or others — would be entirely unjust because many of these individuals would have total incomes, far above the indigent or low income levels — or even greater than the doctor's.

It is far better that we doctors, who exceed in our altruism, continue our generosity by making our adjusted fees on the individual-need basis.

## "THE PUBLISHER SPEAKS"

The unauthorized article, "The Publisher Speaks," in the December issue of ARIZONA MEDICINE, while interesting reading was hardly accurate. It was worthwhile, for it has enticed comment to members of the Editorial Board, and we realize that some members of The Arizona Medical Association do thumb the journal pages.

A full report on the accusations as listed by our former publisher has been submitted to the Board of Directors. The veracity of the statistics included therein has been reviewed and found correct by our Executive Secretary.

It some members would desire to discuss the publisher's allegations, it is suggested that they review the report as submitted.

D.W.N.



In the July 1959 issue of "Arizona Medicine" there was an article on "Mothball Poisoning in Children." It might be of interest to your readers to know that some years ago I had a case of this type of poisoning in which the child was cyanotic and appeared moribund. An intravenous injection of methylene blue resulted in astounding recovery within a few minutes. This type of treatment was not mentioned in the article.

Sincerely yours,  
HUGH C. THOMPSON, M.D.

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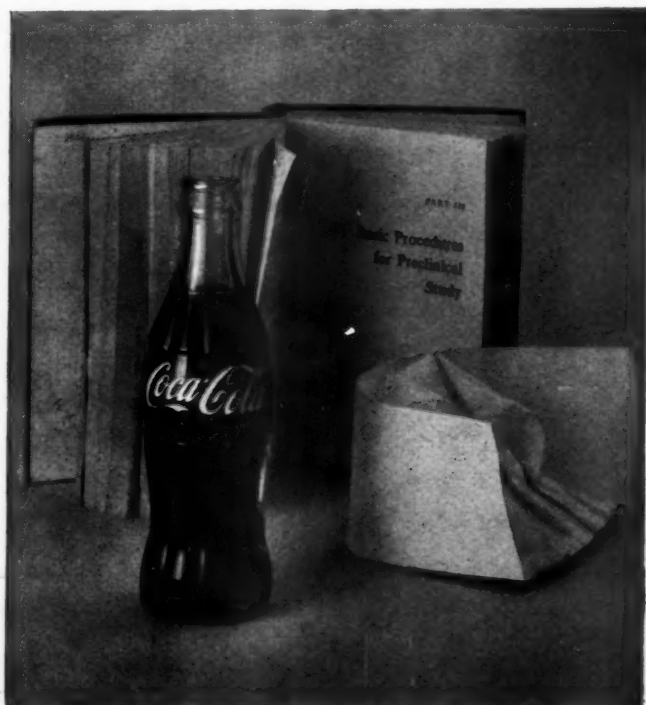
Approved by the Insurance Committee  
and Board of Directors.

Administrator

**CHARLES A. DE LEEUW**  
Insurance Consultant

3424 N. Central Ave. — Phoenix, Arizona

AMherst 6-2403



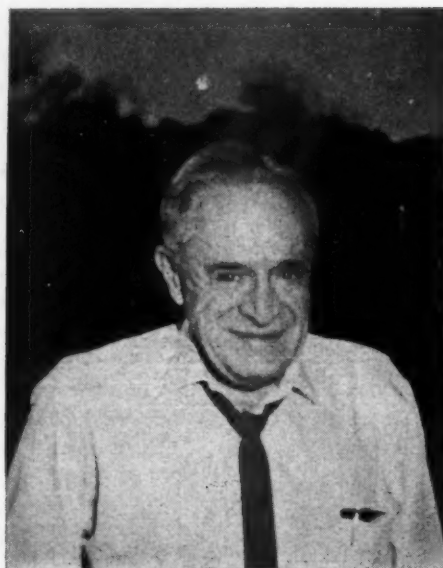
When too many tasks  
seem to crowd  
the unyielding hours,  
a welcome  
"pause that refreshes"  
with ice-cold Coca-Cola  
often puts things  
into manageable order.



## *In Memoriam*

**Elton H. Charvoz, M.D.**

**1890 - 1959**



**1890 - 1959**

Dr. Elton R. Charvoz died in Phoenix November 29, 1959.

Dr. Charvoz was born in San Francisco. He graduated from the University of California Medical School and settled in Humboldt, Arizona after finishing his medical training in 1916. He moved to Phoenix in 1919 and remained there in practice until his death.

He had belonged to the Arizona Medical Association since 1916, and the Maricopa County Medical Society since 1919, serving the latter

organization as its president in 1941.

He was a member of the Trinity Episcopal Cathedral.

He also belonged to the Phi Sigma Kappa and Alpha Kappa Kappa fraternities, the Sahuaro State Kennel Club, and the Executive Club.

He is survived by his wife, Betty; two daughters, Mrs. Simon Kinsman of San Francisco, and Mrs. John R. Howell of Holbrook; a brother, Alan Charvoz of Santa Rosa, California; and five grandchildren.

## *Arizona Medical Association Reports*

### BOARD OF DIRECTORS

#### BOARD OF DIRECTORS

Meeting of the Board of Directors of The Arizona Medical Association, Inc., December, 1959, Leslie B. Smith, M. D. (Vice-President) Chairman, presiding.

#### CONFERENCE

##### *Arizona Federation of Licensed Practical Nurses*

Anticipating a conference of this Board of Directors of The Arizona Medical Association, Inc., with a number of the members of the Board of Directors of the Arizona Federation of Licensed Practical Nurses, Dermont W. Melick, M.D., President, briefly outlined for the Board the current status of the issues at hand between this Association and both the Arizona State Nurses Association Board of Directors and the Arizona Federation of Licensed Practical Nurses, particularly as these issues pertain to national legislation (H.R. 4700 Forand Bill) and desire to discuss local problems of mutual interest.

Doctor Melick reviewed in detail his experiences recently in Yuma at which time he met with the Arizona State Nurses Association during its annual meeting. The American Nurses Association by resolution had expressed favor in support of the Forand Bill. The objective was to seek support of the Arizona nurses in opposition to this type of legislation bringing to their attention the implications therein and Medicine's objections thereto.

Discussion revealed obviously that there is need for improved liaison between the doctor of medicine and the nurses to cultivate better understanding of mutual problems, and to this end, a meeting with a group of nurses appeared

indicated. Steps were taken to bring the two Boards of Directors together for such discussion and such meeting was scheduled. The Nurses have found it inconvenient to attend due to another meeting conflicting and apparently are not prepared to meet on this Board level, suggesting a subcommittee of each group meet in preliminary preparation for a future top level conference.

#### THE FOLLOWING MEMBERS OF THE BOARD OF DIRECTORS OF THE ARIZONA FEDERATION OF LICENSED PRACTICAL NURSES ENTERED THE MEETING:

Edna S. Hoopes (Mesa) President  
 Esther Welker (Yuma) Vice President  
 Bessie W. Chapman (Tucson) 2nd Vice President and Tucson Area President  
 Gladys W. Chapman (Tempe) Secretary  
 Mary A. Taylor (Tucson) Treasurer  
 Helen Laken (Kingman) Director  
 Velma Glimpse (Casa Grande) Director and Florence Area President  
 Florence Furr (Phoenix) Director  
 Louise Renner (Bisbee) Director  
 Bertha Young (Phoenix) Director  
 Charlotte Webb (Mesa) Director and Mesa Area President  
 Annie L. Lamb (Prescott) Prescott Area President  
 Harriet Chapman (Phoenix) Phoenix Area President  
 Faye C. Nichols (Yuma) Yuma Area President

Note: The Kingman and Bisbee areas were not represented.

The L P N s reviewed for the Board their licensing statutes, training programs, aims and

desires in caring for the sick patients in and out of hospitals. Detail and requirements for practicing in Arizona hospitals was also discussed.

A request for assistance from the doctor of medicine in establishing a position consistent with their training and a sincere desire to help the sick patient in the hospital was made to the Board, outlining the current status of nurses' aides and strict limitations imposed by the hospitals and registered nurses, on the L P N s.

#### THE MEMBERS OF THE BOARD OF DIRECTORS OF THE ARIZONA FEDERATION OF LICENSED PRACTICAL NURSES LEFT THE MEETING.

The current attitude of the RN's; the position of the hospital's point of view regarding the services of the LPN's; the differential of the LPN's licensed by waiver, by examination following prescribed training and the training required by RN's was reviewed by the Board.

The new two year training program for the RN was also reviewed by Doctors Yount and Bean.

It was determined that the Subcommittee on Nurses of the Professional Liaison Committee review the entire matter; meeting with representative groups of the RN's and LPN's as it may determine wisdom, and report to the Board of Directors through the Professional Liaison Committee.

#### THE MEMBERS OF THE SUBCOMMITTEE ON NURSES OF THE PROFESSIONAL LIAISON COMMITTEE LEFT THE MEETING.

Doctor Richard A. Harvill, President of the University of Arizona (Tucson) by letter dated November 3, 1959, speaking for Mr. Alexander G. Jacome, President of the Board of Regents of the Universities and State College of Arizona, in the matter of gift (\$1,000.00) of this Association to said Board of Regents to help defray the expense of a proposed study to determine the needs and potential for the establishment of a medical school in Arizona, which gift has not been to date accepted by the Board of Regents, said Board having since obtained financial assistance and is proceeding to implement the survey, advised that Mr. Jacome "is definitely of the opinion that the Association may very properly expend the sum that had been contemplated to

apply toward the medical study in paying some of the cost of publishing the proceedings of the Medical Education Day conducted May 1, 1959, in pamphlet form and in making appropriate distribution. It is the opinion of President Jacome that, in making the expenditure in this way, in reality the Association is making a contribution to the understanding of medical education by the people of this state to as great a degree as if you contributed this sum directly to the survey study. The excellence of the papers and other presentations made on Medical Education Day last May is well known and it is considered vitally important that this information be disseminated to a wider audience. "Mr. Jacome assures me that there will be no objections by the Board of Regents to this last proposal; indeed he is quite certain that it will be well received by the Board (of Regents) and hence you may proceed to handle the matter accordingly. A report will be made to the Board (of Regents) at its next meeting in order to have the record clear."

Counsel advised that while there is every good intention implied in the release of this Association's previous contribution, to complete the record it would be well for Doctor Melick to communicate with Doctor Harvill and ultimately obtain a letter from the Board of Regents following its next meeting indicating its concurrence in the views expressed by President Jacome through Doctor Harvill.

#### MEMBERSHIP CLASSIFICATION CHANGES *Cochise County Medical Society*

It was moved, seconded and unanimously carried that the Board approve Active membership, dues exempt, for Arnott K. Duncan, M.D., effective January 1, 1960, on the basis of having attained the age 70 years, in accordance with the recommendation of the Cochise County Medical Society.

#### *Graham County Medical Society*

It was moved, seconded and unanimously carried that this Board approve Associate membership, dues exempt, for Warren James Nelson, M.D., effective January 1, 1960, on the basis of "residency training" in Radiology, in accordance with the recommendation of the Graham County Medical Society.

#### *Maricopa County Medical Society*

It was moved, seconded and unanimously carried that this Board approve Active membership, dues exempt, for Harry J. Felch, M.D., effective



January 1, 1960, on the basis of having attained the age 70 years, in accordance with the recommendation of the Maricopa County Medical Society.

It was moved, seconded and unanimously carried that this Board approve Associate membership, dues exempt, for Walter Paul Sherrill, M.D., effective January 1, 1959, (retroactive) on the basis of retirement due to ill health, in accordance with the recommendation of the Maricopa County Medical Society, excepting for the effective date.

It was moved, seconded and unanimously carried that this Board approve Service membership for Adolph Joseph Urban, M.D., through the component Maricopa County Medical Society, on the basis of service in the Phoenix Public Health Service Indian Hospital, one-quarter dues payment, effective November 6, 1959.

#### *Navajo County Medical Society*

It was moved, seconded and unanimously carried that this Board approve Associate membership, dues exempt, for Myron G. Wright, M.D., effective January 1, 1960, on the basis of illness, as recommended by the Navajo County Medical Society.

#### *Pima County Medical Society*

It was moved, seconded and unanimously carried that this Board approve Active membership, dues exempt, for Edward J. Gotthelf, M.D., effective January 1, 1960, on the basis of having attained the age 70 years, as recommended by the Pima County Medical Society.

#### *Yavapai County Medical Society*

It was reported that Victor Paul Johnson, M.D., voted to membership in the Yavapai County Medical Society but not as yet having paid any dues to the Association, has determined to enter a "residency training" (Radiology) program in Colorado with the VA, January 1, 1960.

It was directed that the Executive Secretary investigate Doctor Johnson's current AMA status reporting thereon to the Yavapai County Medical Society and it may be that Society will recommend the payment of half dues for 1959 by Doctor Johnson to the Association.

### PROFESSIONAL COMMITTEE

#### *Relative Value Fee Schedule — Further Study*

This Board in meeting held October 11, 1959, following recommendation of its Professional Committee in the matter of standard relative value fee schedules for industrial and commercial groups, took the following action:

"That it is medically ethical that the county societies may accept the principles of the relative value fee schedule for industrial and commercial groups, the unit value to be separately negotiated for each group."

The Professional Committee at a meeting held November 8, 1959, gave further consideration to the matter and strongly recommends to the Board that it is its firm conviction this matter should be thoroughly explored and investigated by an existing committee of the Association; that if there is no proper existing committee that one be established; and that the objective of the committee be to report and make recommendations to be considered by the House of Delegates of this Association at its next annual meeting.

Question was raised as to whether or not any of the Arizona State or County Bar Associations had been contacted by the Association or its Committees in this regard.

MR. JACOBSON: The experiences we have had with our recommended minimum fee schedule, it might be rewarding if there is to be a committee to discuss this, to talk to the Bar because they have had enough experiences both here in Arizona and around the country nationally to first of all have some pretty good ideas as to what the pitfalls are and second, some pretty good ideas as to how at least some of them can be avoided. I think it is the feeling pretty much of lawyers in Maricopa County, it got down to a county finally, that the recommended minimum fee schedule, carefully hedged as ours is, has been more of a help than a hindrance; but it is so carefully hedged that it can, I think, give some ideas to the doctors to be helpful too. It does go only to minimum cases and it is very carefully worded in that respect. It might be interesting for the doctors to take a look at it, it's a printed thing.

It was moved, seconded and unanimously carried that the matter be referred to the Fee and Contractual Medicine Committee, it to immediately begin hearings on this matter and make recommendations to the Board of Directors.

#### *American Cancer Society — Statistical Survey*

The Professional Committee in meeting held November 8, 1959, recommended to the Board of Directors that a statistical survey, as being effected through the American Cancer Society, be approved.

Such survey is being undertaken on a voluntary basis through the American Cancer Society

to be conducted over a period of ten years during which the various families will be reported on a "confidential" basis, which will cover some fifty thousand families in the United States, five thousand of which will be in the state of Arizona. The analysis will be obtained in an effort to track down many environmental factors in cancer, etc. It is reported that the project has the approval of the American Medical Association.

It was moved, seconded and carried, eleven votes in the affirmative and one in the negative, that we accept the report.

It was moved, seconded and unanimously carried that we approve their recommendation in so far as it is not in conflict with any legal restrictions or revelation of confidential communications.

#### *MCH — Prevention of Gonorrheal Ophthalmitis — Agents other than Silver Nitrate*

The House of Delegates of this Association in annual meeting held May 2, 1959, adopted a resolution calling for the approval of agents other than silver nitrate for use in the prevention of gonorrheal ophthalmitis. The Arizona State Department of Health was directed to approve a list of additional agents other than silver nitrate for the prevention of the gonorrheal ophthalmia of the newborn, after consultation with recognized medical authorities on the subject.

The American Academy of Pediatrics arrived at the following conclusions:

1. Gonorrheal ophthalmitis still constitutes a definite hazard to the newborn infant.

2. Silver nitrate has amply demonstrated its effectiveness as prophylactic of gonorrheal ophthalmia.

3. The occurrence of non-specific conjunctivitis does not, of itself, constitute adequate reason for change.

4. The routine use of antibiotics may introduce further problems referable to control of infections of the newborn.

The Professional Committee recommends to the Board of Directors that it take no action as directed by resolution of the House of Delegates in question.

It was moved, seconded and unanimously carried that we accept this report.

#### *Subcommittee on Aging*

It was reported that on his request, Lowell C. Wormley, M.D., had been relieved of his assignment as Chairman of the Subcommittee on Aging of the Professional Committee and that

Otto E. Utzinger, M.D., had accepted an interim appointment to that assignment by the President, subject to this Board's approval.

A telegram received Saturday, December 12, 1959, from Doctor Utzinger, stated that: "Must resign from Subcommittee on Aging. Will explain when I return to Phoenix."

It was moved by Doctor Hileman, seconded by Doctor Tuveson and unanimously carried that Doctor Melick receive this Board's prior approval of his selection for interim appointment to this important assignment.

#### *ARIZONA STATE BOARD OF HEALTH*

James D. Barger, M.D. (Phoenix), Orin J. Farness, M.D. (Tucson) and Ralph H. Smith, M.D., Board nominees to be submitted to the Governor for selection to fill a vacancy (2/1/60) on the Arizona State Board of Health, were reported as indicating willingness to accept appointment if selected. J. Lytton-Smith, M.D. (Phoenix), a fourth nominee, indicated his willingness to accept; however, with the stipulation he will not be expected to attend all meetings, especially through the summer months. Ben P. Frissell, M.D., the fifth nominee, requests that his name be removed from further consideration. Currently, he is serving as a member of the Maricopa County Board of Health.

It was moved, seconded and unanimously carried that the names of Doctors Frissell and Lytton-Smith be removed from the list of nominees and that the names of E. Henry Running, M.D., and Hugh C. Thompson, M.D., be added to this list.

It was moved, seconded and unanimously carried that, should Doctor Hugh C. Thompson decline acceptance of this assignment, the President has this Board's approval to make another appointment to the list of nominees.

#### *ARTICLES OF INCORPORATION AND BY-LAWS COMMITTEE*

##### *Membership Appointment — Acceptance*

It was reported that the appointees to the re-activated Articles of Incorporation and By-Laws Committee have accepted such assignment and they are as follows:

Leslie B. Smith, M.D., Chairman

W. R. Manning, M.D.

Lorel A. Stapley, M.D.

##### *Committee Request for Instructions*

DOCTOR SMITH: The committee now being activated, the Chairman would like to be advised as to what the wishes of this Board may

be. Is it intended that this phrase regarding membership be stricken or replaced or revised, or whether we just study it, the phrase being: "be in active practice in Arizona".

Considerable discussion was held as pertains to the problems arising in the Association sponsored sickness and accident insurance program for members removing from the State of Arizona.

It was moved, seconded and carried, ten (10) voting in the affirmative and two (2) in the negative, that we maintain this section and that there be no change in the By-Laws relative to membership.

#### AMA PAMPHLETS DISTRIBUTION

##### *The Pill That Could Change America*

Leslie B. Smith, M.D., called attention to a pamphlet received from the AMA entitled: "The Pill That Could Change America," and indicating a desire for extensive distribution to the doctor of medicine in Arizona.

It was moved, seconded and unanimously carried that we obtain a goodly supply of these pamphlets distributing them to union halls and places like that whenever we can get them in.

##### *PR In Action — PTA Distribution*

It was determined that all AMA brochures for PTA distribution be submitted to the Subcommittee on Schools, Professional Liaison Committees for review and comment.

California Statute A.B. No. 2873—Amend. . . . .

Leslie B. Smith, M.D., referred to the current California Statute A.B. No. 2873 — Amend Section 2144, Business and Professional Code — Emergency Medical Treatment, stating that, "It occurred to me that maybe we could turn this over to our Legislative Committee and our lawyers with the thought that we, in Arizona, could have such legislation here."

It was moved, seconded and unanimously carried that we follow the suggestion of Doctor Smith.

Establishment of (State) Joint Councils To . . .

DOCTOR HAMER: Mr. Chairman, I think the Council should consider the request received from the (National) Joint Council to Improve the Health Care of the Aged, that the individual States formulate a similar Council in order to have proper liaison with the National Council, and as you perhaps know, this Council is composed of the American Hospital Association, the American Dental Association, the American

Medical Association and the American Nursing Home Association. They, of course, are working in close collaboration with those organizations in the country which show an interest in defeating the Forand Bill. The matter is before you to discuss and determine whether we shall stimulate the formation of a similar Joint Council in our own State.

At the tail end of the report which I submitted to Council in October, at which time I was unable to be present, I attached a suggested guide for the formation of State Joint Councils, which you have supported in these various meetings on the "Aging" which I attended, and you have a copy of it.

It was moved, seconded and unanimously carried that the President be authorized to explore the possibility of implementing the Joint Commission (with the Arizona Hospital Association, Arizona Dental Association and the Arizona Nursing Home Association).

#### LEGISLATIVE COMMITTEE

##### *H.R. 4700 — Forand Bill*

The President in the early morning session reviewed his experiences with the Board of Directors of the Arizona State Nurses Association in attendance during its annual meeting in Yuma and outlined some of the problems existing as he saw them; also, their obvious lack of knowledge of the real implications inherent in the passage of a measure such as H.R. 4700 better known as the Forand Bill.

Lee Ackerman of the Lee Ackerman Investment Co., Inc., of Scottsdale, by letter dated November 20, 1959, seeks information as to a documented plan to combat the Forand Bill by voluntary private enterprise. Referred to President to transmit material.

The State Bar of Arizona, by letter dated December 11, 1959, advised that at a meeting of its Board of Governors, by formal action, went on record as opposing H.R. 4700, 86th Congress, and directed that the Arizona delegation in Congress be so advised.

It was moved, seconded and unanimously carried that this Association reaffirm its strong opposition to the enactment of H.R. 4700, 86th Congress.

##### *Uniform Hazardous Substances Act*

For some time the matter of need for and/or desirability of enactment of an Arizona statute providing declaration of hazardous ingredients and warning statements on the label and in ac-



companying literature of chemical products has been discussed. The Committee on Toxicology of the American Medical Association, following much study and preparation, produced a model for uniform laws entitled: "Uniform Hazardous Substances Act." It has been considered on the Federal level but to date there appears no record of adoption, either by the Federal Government or on a State level. Our House of Delegates in 1958 adopted a resolution demanding action on a limited basis specifically dealing with lead content in paint used for toys, nursery furniture or interiors of dwellings. Our Legislative Committee following review recommended introduction in the Arizona Legislature of a model act on toxicity to cover all the toxic substances in line with the AMA proposal.

The Council (now Board of Directors) in April of this year, referred the entire matter to counsel to determine need and preliminary legal review soon realized it was not just a mechanical, legal evaluation but one where Medicine must join to determine medical need also. After lengthy discussion the following action was taken:

It was moved, seconded and unanimously carried that we take no action at this time to further legislation (in this regard) on the state level.

#### COCONINO COUNTY MEDICAL SOCIETY Navajo Ordnance Hospital (Bellemont)

##### *Treatment Civil Service Employees — Complaint*

The Coconino County Medical Society filed a formal written complaint against the further maintenance of the Navajo Ordnance Depot hospital located off Highway 66 approximately twelve (12) miles West of Flagstaff, especially as pertains to providing hospital and medical care to some four hundred (400) civilian Civil Service employees and their dependents. While some seventeen years ago need for the operation of this hospital facility and provision for the care of civilian employees by military doctors might have been essential, today, with a modern general hospital and adequate medical care available in Flagstaff, there appears no need for the continuation of operation of the N. O. D. hospital.

It was determined to refer this problem to the subcommittee on Governmental Medical Staffs of the Professional Liaison Committee for investigation and report.

#### STATE DEPARTMENT OF PUBLIC HEALTH

##### *Mental Health Division*

In the absence of Doctor Beaton who was to have presented this subject involving fees paid for psychiatric treatment, the matter was withdrawn.

#### AMA — THE CITATION — LAW DEPARTMENT

##### *Closed Panel Practice*

Referring to an article appearing in the AMA publication entitled: "The Citation," produced by its Law Department, dealing with "closed panel practice," Doctor Smith called attention thereto and recommended review by counsel in the light of Arizona statutes.

It was moved, seconded and unanimously carried that counsel review the article in question for correlation with Arizona law and bring back to us the status of the practice of medicine at the present time.

##### *Legal Conference — Chicago*

Doctor Smith further reported to the Board that he had received notification from the Law Department of AMA of a meeting to be held in Chicago, May 20 and 21, 1960, primarily for executive secretaries and counsels, expressing the view that if possible both Mr. Jacobson and Mr. Carpenter should arrange to attend.

#### AMA CLINICAL SESSION — DALLAS

Doctor Hamer, Delegate to AMA, reported briefly on the proceedings of the AMA Clinical Session held in Dallas early in December expressing the view that possibly the most controversial subject was that dealing with the "freedom of choice of physician" wherein the House reaffirmed two statements approved previously in Atlantic City:

1. "The American Medical Association believes that free choice of physician is the right of every individual and one which he should be free to exercise as he chooses."
2. "Each individual should be accorded the privilege to select and change his physician at will or to select his preferred system of medical care, and the American Medical Association vigorously supports the right of the individuals to choose between these alternatives."

However, in order to clarify and strengthen its position on the issue of freedom of choice of physician, the House also adopted this addition-



al statement which was submitted as a substitute amendment on the floor of the House:

3. "Lest there be any misinterpretation, we state unequivocally that the American Medical Association firmly subscribes to freedom of choice of physician and free competition among physicians as being prerequisites to optimal medical care. The benefits of any system which provides medical care must be judged on the degree to which it allows of, or abridges, such freedom of choice and such competition."

A more detailed report will appear in *Arizona Medicine*.

Doctor Stapley reviewed his initial experiences and impressions on this, his first authorized attendance to the AMA meetings expressing gratitude for the privilege to be there. Summed up, he concluded that every doctor of medicine should attend one or more of these meetings to fully appreciate the serious approach to and manner of handling of Medicine's business and its interests by the House of Delegates of AMA.

#### COMMUNICATIONS

##### *Southern Arizona Retired Teachers Association Request for Reduced Medical Rates for Retired Teachers*

Mrs. Osa Zinn, President of the Southern Arizona Retired Teachers Association (Tucson) by letter dated November 7, 1959, requests this Association to give serious consideration to reduced medical rates for retired teachers in line with recently expressed views of the AMA dealing with fees for senior citizens over sixty-five years of age and alleged action of the California Medical Association implementing such expression by the parent body.

It was pointed out that the Association does not have the power to set fees for individual doctors; that the doctor of medicine has traditionally and always considered the income of the patient on an individual basis and will continue to reduce costs when indicated; that nobody has ever been denied medical attention for lack of money; and if anyone can point out any proven cases of reported teachers in need where medical services have been denied or where fees have been out of line, such cases will be investigated.

It was moved, seconded and unanimously carried that Doctor Melick reply to this inquiry.

##### *Arizona State Prison — Women's Wing*

Mrs. Carl G. Hoyer, Chairman of the Committee for the Improvement of the Women's Division of the Arizona State Prison, Florence, Arizona (P. O. Box 82, Scottsdale, Arizona), by letter dated November 15, 1959, sought the adoption of a resolution by this Association in support of their project.

No action taken.

##### *National Society for Medical Research — Contribution*

The National Society for Medical Research (Chicago), by letter dated November 18, 1959, express appreciation for this Association's contribution (\$100.00) in support of its work.

Received and filed.

##### *Red Book Magazine — Cigarette Smoking*

Walter Goodman, Senior Editor, Red Book Magazine, by letter dated November 11, 1959, requests this Association to advise what it has done or may anticipate doing to bring the results of the major studies in this area to the attention of its members and patients, in the light of statements of various official and scientific groups over the past several years that a causal connection between cigarette smoking and lung cancer appears to have been established.

No action.

##### *American Medical Bureau*

The "Medi-Credit" promotion proposal of the American Medical Bureau and investigative report of the Maricopa County Medical Society was reviewed.

No action.

##### *Medical and Chirurgical Faculty — Appreciation*

The Medical and Chirurgical Faculty of the State of Maryland, by letter dated December 9, 1959, expresses appreciation of the executive secretary and delegates for the hospitality extended at the AMA meeting in Dallas last week.

Received and filed.

#### OTHER BUSINESS

##### *Medicare Contract — Supplemental Agreement*

Submitted for review and execution authorization was supplemental agreement presented by the Office of Dependents' Medical Care (Contract No. DA-49-007-MD-806) providing for restoration of certain care, effective January 1, 1960.

It was regularly moved and unanimously carried that the President and Secretary be authorized to execute in behalf of the Association, the

supplemental agreement submitted.

#### *Treasurer's Report*

Doctor Yount presented the Treasurer's Report on the state of finances of the Association to date following relocation of the new Central Offices in the Central Towers Building, Phoenix, previously authorized by the Board of Directors. The following additional monies were allocated or reallocated to the budgeted appropriations for the fiscal year 1959-60:

Postage .....	\$ 300.00
Rent .....	615.56
Salaries .....	5,700.00
Supplies .....	1,100.00

It was moved, seconded and unanimously carried that the Board of Directors approve the allocation or reallocation of an additional \$7,700.00 to the 1959-60 Budget of Appropriations necessary to conduct the business of the Association.

#### *Publishing Committee*

The Treasurer reviewed current expenditures to date associate with the publication of "Arizona Medicine" Journal.

It was determined by the Board that the Publishing Committee through its chairman, the

Editor-in-Chief, prepare on or before March thirty-first, each year, a budget of its anticipated expenditures, together with its anticipated income and submit such report to the Treasurer of the Association for inclusion in preparation of his annual budget report to the House of Delegates.

It was further determined by the Board that future authorization for equipment or expenditures of a major value be recommended to it for its approval prior to such purchases.

LOREL A. STAPLEY, M.D.  
Secretary

#### ARIZONA MEDICAL ASSOCIATION ANNOUNCEMENT ORIGINAL PAPERS — 1960 ANNUAL MEETING

April 1st is the deadline for accepting papers to be judged by the Scientific Assembly Committee to be presented during the 1960 annual meeting in Scottsdale, the award for the most original contribution to be a bronze plaque which will be presented at the president's dinner dance.

**"finger-itis"**  
yes, any rheumatic "itis" calls for  
**Sigmagen**  
corticoid-salicylate compound  
TABLETS

Schering

60-J-250

## PROFESSIONAL COMMITTEE BOARD OF DIRECTORS — ACTIONS

The Board of Directors of this Association in meeting held December 13, 1959, took the following actions on recommendations of this Professional Committee:

1. In the matter of standard relative value fee schedules, it directed that this subject be referred to the Fee and Contractual Medicine Subcommittee of the Medical Economics Committee, that body to immediately begin hearings thereon and make recommendations to the Board of Directors.

2. The proposed statistical survey to be undertaken by the American Cancer Society, support of which was recommended by the Professional Committee, was approved insofar as it is not in conflict with any legal restrictions or revelation of confidential communications.

3. Referable to Resolution No. 6, adopted by the House of Delegates of this Association on May 2, 1959, relating to approval of agents other than silver nitrate for use in the prevention of gonorrheal ophthalmitis, and in accordance with recommendation of the Professional Committee, November 8, 1959, the Board of Directors determined that no action be taken as stipulated in the resolution aforesaid.

4. Otto E. Utzinger, M.D. (Scottsdale), previously appointed subcommittee chairman on Aging and who had accepted the assignment, resigned. Appointment of a substitute is being considered.

### SUBCOMMITTEE REPORTS

Mention was made of the request of Walter Goodman, Senior Editor, Red Book Magazine, that the Association advise what it has done or may anticipate doing to bring the results of the major studies in this area to the attention of its members and patients, in the light of statements of various official and scientific groups over the past several years that a causal connection between cigarette smoking and lung cancer appears to have been established. On advice that the Board of Directors had recently considered this matter and determined it wisdom not to respond, no further action was taken.

### Civil Defense and Safety

Doctor Kimball briefly reviewed past activities in the field of Civil Defense and the problems yet to be resolved. That there continues to be considerable lethargy in this activity on all

levels of administration there is little doubt. It is the hope steps will soon be taken to coordinate the various functions to assure preparedness for any eventuality.

### Mental Diseases

Doctor Gregory briefed the Committee on the status of the WICHE postgraduate clinical psychiatric education project for physicians. Details will soon be publicized possibly in ARIZONA MEDICINE. A ten-week (2 hours each) series of courses will be activated in the Spring of this year. Doctor Otto L. Bendheim and Doctor William B. McGrath, both of Phoenix, have been selected as the "teachers" and will prepare therefor through attendance at special indoctrination courses scheduled to be held in San Francisco the early part of March, under the auspices of WICHE.

To be selected are the students which will be limited to fifteen (15). Question of choice was raised and guidance of this Committee sought. The courses will be held in Phoenix; accordingly, availability and transportation convenience must be considered, as full and regular attendance throughout the ten-week series of lectures is essential to the success of the program. It was suggested that possibly seven (7) student member doctors of medicine be selected from Maricopa County; three (3) from Pima County; and five (5) from areas outside these two counties. Selection should be by invitation and it was conceded that the objectives could best be met through statewide participation.

It was concluded that Doctor Gregory promulgate an appropriate letter to be prepared and mailed to the Central Office to the Presidents of selected County Medical Societies calling their attention to the importance of this pilot program and urge the careful selection of a member or members, as the case may be, to represent the society as a student(s) who will be able to attend regularly all of the courses throughout the ten-week period.

### Venereal Diseases

Doctor Stolf presented for discussion the subject of pre-marital examinations and value of the blood specimen serological test provided by statute enacted in 1957 (Title 25, Marital and Domestic Relations, Chapter 1, Sections 25-103.01 through 25-103.10 A.R.S.) This item was referred by the Board of Directors to the Professional Committee for review and recommen-

dation.

Considerable discussion ensued. The purpose of this statutory regulation is twofold: (1) one of "delay" (waiting period) in the issuance of a marriage license; and (2) examination, including a standard serological test, as may be necessary for the discovery of syphilis.

To dispose of (1) above, no one is in disagreement with "delay", possibly the waiting period should be extended; however, if this be the major intent of the legislation, there is unanimous agreement that it should not be coupled with a medical problem or examination of questionable value, as prescribed.

Doctor Salsbury reported that the most that can be said for his department's experiences since enactment of the law, as pertains to examination and serological test, is that it has been a means to upgrade the standards of some laboratories in that they have been compelled to meet certain minimums of testing. Question has been raised as to whether both an examination (limited physical) and a serological test are required by the act. Generally accepted opinion so indicates; however, in the instance of a local Superior Court Clerk (Wilson), he has taken it upon himself to interpret the statute as not requiring both and accepts the test as complying therewith. The case finding is considered of little value under such circumstances, and to apply this and not apply the physical examination is felt not right. Border problems at Yuma were reported.

Doctor Stolfi reviewed progress over the years in the treatment of syphilis, relatively simple today; statewide experiences where available; concluding that as best as can be determined from all available statistics, the marital law, since its enactment, has had no noticeable effect upon any decline of syphilis in Arizona. "If the State wants 'delay' in marriages, let's have it, but let's not use this test as the basis. The emotional and moral factors should not be confused from the medical standpoint. The economical load does not justify the test. It is not an aid or alternative in instances of lues for having it done. Steps should be taken at least to repeal that portion of the existing law requiring a serological test. It is not of significant value in control of infectious cases of syphilis. It can and does add moral and emotional upsets in the instance of a false positive reaction."

It was moved by Doctor Stolfi, seconded by Doctor Stapley and unanimously carried that this Professional Committee recommend to the Board of Directors the adoption of the following resolution:

WHEREAS, experience has shown the serological test to be of little value in case-finding of syphilis; and

WHEREAS, morally, we are in favor of a law requiring a "waiting period before the issuance of a marriage license in this state, but not on the basis of a pre-marital blood test; now, therefore, be it

RESOLVED, that steps be taken to repeal that portion of the statute now in effect requiring "examination, including a standard serological test, as may be necessary for the discovery of syphilis", for the reasons: (1) it is a significant added expense; (2) it does rarely reveal infectious syphilis; and (3) it may and does cause serious emotional problems in the instance of a false positive reaction.

#### REPORT OF THE CHAIRMAN

##### *Aging*

Doctor Schwartzmann presented for the information of the members, a communication originating out of the Insurance Committee of the Chamber of Commerce of the United States dealing with activities on "Aging", and its concern over legislative attempt, through amendments to the Social Security law, to effect compulsory health insurance. Full utilization of the Chamber's resources is planned to alert business and professional leaders to its implications and adequately inform them of the issues and potential dangers. They will be encouraged to thoroughly study the plan, participate in meetings, both local and national, leading up to the White House Conference in 1961, and actively support the AMA and other interested groups in aggressively resisting further socialization of this country. It is urged that whenever called upon, each of us willingly assume the assignment in combating the movement of the socializers.

##### *Pediatrics Seminar*

Doctor Schwartzmann again presented for further consideration the request of Charles A. Tompkins, M.D., Tucson Pediatrician, for advice as to the ethics of conducting a symposium or forum constituting a workshop type of seminar on preventive and therapeutic pediatrics, phases of the problem with respect to environment,



physical illness, resistance to his environment as a natural response to situations, etc. It was indicated Ross Laboratories expressed interest in financing the promotion and printing the proceedings of the seminar open to pediatricians. This would be a continuation of his past undertakings as a teacher and would include local, state, national and possibly international instructors. He sought advice as to the permissibility to present such forums.

The Professional Committee previously took the position and advised the Board of Directors that it sees no reason why it should not be supported by one of the private companies, if needs be, or partially so; further recommending that serious consideration for this type of meeting be given to presentation at the state meeting level so that it will cover all as well as those who would go to it on an annual basis; and offering Doctor Milton Semoff's experience at that time in aiding that as part of the seminar deficit that we have in this Committee. The Board responded that it is not the policy of the Association to sponsor such type of seminar.

It was pointed out that "sponsorship" was not sought. He is trying to find out whether the conduct of such seminar is permissible. The Board action left the impression he should not undertake it. He asks again whether it is ethical and whether he would have permission to go ahead.

It was regularly moved and unanimously carried that Doctor Tompkins be advised that if he wants to do it, it is up to him; that it is not unethical; that the state Association will not sponsor it directly but that there is no reason why he should not do it.

LOREL A. STAPLEY, M.D.  
Secretary

## LEGISLATIVE COMMITTEE

### ARIZONA STATE DEPARTMENT OF HEALTH

Doctor Ben P. Frissell, Chairman, Subcommittee of Public Health of the Professional Liaison Committee of this Association reviewed the membership composite of his subcommittee and reason for its organization following action of the House of Delegates during the past annual meeting. Development of improved liaison between Medicine and the Public Health Department was and is the prime objective in the

interest of public health.

Taking a direct interest in matters dealing with the preventive medicine aspects of public health and an analysis of the existing departmental structure on the state level, the need for reorganization became immediately apparent. Clarence G. Salsbury, M.D., present Commissioner, consented to continue to serve until April of 1961 in the hope that a well trained public health administrator can be located to fill the anticipated vacancy.

The first objective, following review of the statutes, is to cause to be enacted an amendment which will provide for a reasonably adequate salary to attract employment of a qualified doctor of medicine trained in public health administration. To succeed in such accomplishment, obviously, the need for an enlightened and well informed Legislature became imperative. A series of conferences to this end already have been conducted under the guidance of our legal advisors.

Doctor Brazie, as chairman of the State Health Department, reviewed the problems of the department over the past several years, inadequate budget and conflict between the Commissioner and the Legislature. Considerable loss in personnel has resulted creating problems of serious proportions.

Mr. Van Dyke presented three (3) bills which the Board of Health feels is essential of enactment this year. They are:

1. Making an appropriation to the State Department of Health, the sum of \$25,958.00, to complete the purchase and installation of necessary equipment and cabinet work, move and install equipment owned, and to refurbish quarters in the south side of the ground floor of the Tucson state office building to accommodate the southern Arizona branch of the state laboratory.

2. Amending Section 36-132 B (A.R.S.) [introduced as H. B. 100 1-28-59 - 1st Regular Session] by adding an item:

"20. When advisable, contract with the United States or any department or agency thereof, or with the state or any political subdivision or agency thereof, or with any private organization or agency thereof, for the purpose of providing additional professional or public health services to the state or any part thereof. The state department of health may accept and expend funds for the specified services in ac-

cordance with the terms of the contract. Any funds received as provided by the contract shall be maintained separately and shall not become a part of the state general fund."

3. Amending Section 36-105 (A.R.S.) to provide for the more expeditious handling of procedures dealing with abatement of public nuisances.

It was moved by Doctor Hamer, seconded by Doctor Wood and unanimously carried that the proposals of the Board of Health [outlined above] be approved and submitted to the Board of Directors for its consideration.

It was moved by Doctor McDaniel, seconded by Doctor Melick and unanimously carried that we express approval of the excellent work so far accomplished by the subcommittee on Public Health, headed by Doctor Frissell; and further, recommend to the Board of Directors approval of the proposed amendment to Section 36-135 (A.R.S.), providing for the establishment of a more realistic salary for the position of Commissioner of Public Health (a doctor of medicine), and prescribe adequate qualifications for the position.

#### AMBULANCES - EMERGENCY MEDICAL CARE

Doctor Wood presented for consideration, a list of recommendations dealing with the "transportation of the injured," approved by the Joint Policy Committee of the American College of Surgeons, American Association for the Surgery of Trauma, and the National Safety Council. Basically, it is the desire to require adequate and continuing first-aid and emergency medical care training of all personnel who attend traffic casualties; specifically, ambulance drivers and/or attendants. National survey statistics in this connection, were presented and discussed encompassing some 865 cities throughout the United States. Also presented were the results of a recent meeting with local morticians and others, including Mr. Silvio, operators of public ambulance conveyances. While there was general agreement in the proposals, the operators were reluctant to accept further regulation in the light of established fees for services currently being rendered, fixed by the Arizona Corporation Commission, considered woefully inadequate compared to such fees in effect in other sections of the country. As a matter of fact, most morticians would be agreeable were the city and/or county to take over and operate

such services.

Also presented for review were copies of three (3) bills and/or ordinances in effect, adopted by the State of California, Commonwealth of Massachusetts and City of Flint pertinent to the subject. Specifically to point is Section 21714 of the Vehicle Code of the California law enacted in 1959 reading in part as follows:

"No owner of a publicly or privately owned ambulance shall permit the operation of such ambulance in emergency service unless either the operator thereof or an attendant on duty therein possesses an Advanced American Red Cross First Aid Certificate or an Advanced First Aid Certificate issued by the United States Bureau of Mines \* \* \* [followed by procedure for revocation of permit on finding of violation thereof; and providing for the adoption of rules and regulations to implement the act]."

Further, Doctor Wood presented a copy of recommended ordinance or act suggested for the State of Arizona.

It was the consensus that it appears the first step to be taken would be to appeal to the Corporation Commission to consider the establishment of an increased rate for ambulance services and then, step number two, appeal to the Phoenix City Council to adopt an ordinance to regulate transportation of the injured. At a later date, statewide application thereof could follow.

It was moved by Doctor Reed, seconded by Doctor Melick and unanimously carried that this Legislative Committee recommend to the Board of Directors that Doctor Wood present to the (Arizona) Corporation Commission a proposal to the effect that an increase in ambulance services fees on a competitive basis with other states be considered; and that Doctor Wood take this problem to the Maricopa County Medical Society's Legislative Committee for further action.

It was moved by Doctor Truman, seconded by Doctor Melick and unanimously carried that we recommend to the Board of Directors acceptance of the California Act [Section 21714 of the Vehicle Code] referable to operation of ambulances in emergency service, requiring first aid certification of operator or attendant on duty therein; and that following any necessary modification thereof to coordinate it with any existing Arizona statutes, that steps be taken

to introduce the measure.

### FLUOROSCOPIC SHOE FITTING

Martin Snyder, D.S.C., President of the Arizona Chiropody Association, by letter dated January 5, 1960, advised that at its meeting its association reaffirmed its stand with regard to fluoroscopic shoe fitting (i.e. to prohibit it), and instructed Doctor Howard Seyfert of Phoenix, that association's legislative chairman, to contact the legislative chairman of this association and cooperate in securing the necessary legislation.

Doctor Shupe stated he would get in touch with Doctor Seyfert and discuss procedure, he being of the opinion their association should take the initiative in introducing any such legislation.

It was moved by Doctor Reed, seconded by Doctor Wood and unanimously carried that the suggestion of the chairman in making contact with Doctor Seyfert be approved; and that this Legislative Committee recommend to the Board of Directors that we also approve the elimination of the use of such fluoroscopic shoe fitting equipment in stores.

### CANCER ADVISORY COMMITTEE

Doctor Shupe presented for the information of the Committee, a proposed bill to be introduced in the Second Regular Session of the current Twenty-fourth Legislature, by Nelson D. Brayton, M.D., Representative (Gila), relating to public health and safety, providing for the establishment of a Cancer Advisory Committee to the Arizona State Board of Health. Most of the suggested membership are to be doctors; they will develop statistics on cancer in the state and advise the State Board of Health on infractions, treatment and advertising in the field of health. It is patterned after a similar California law.

It was moved by Doctor Wood, seconded by Doctor Melick and unanimously carried that this proposed bill, submitted to this Committee, be given more thorough study; that an opinion be obtained from counsel of the Association and, following receipt thereof, copies be made and along with copies of the measure itself, make distribution among the committee membership for further deliberation.

### OTHER BUSINESS

#### Navajo Ordnance Depot

Doctor Kahle presented for the information of the membership the problem confronting the

doctors of Coconino County relating to the treatment of civilian Civil Service employees and their dependents by military medical personnel at the Navajo Ordnance Depot hospital. Recognizing this to be a problem of immediate local concern in the instance of available and adequate private hospital facilities and medical services, it was pointed out that the practice could grow and even expand to other military installations. When speaking with congressional representatives, Doctor Kahle urged the membership to point out this practice and suggest that it be investigated. This matter was previously considered by the Board of Directors and referred to its subcommittee on Governmental Medical Staffs of the Professional Liaison Committee for investigation and report.

LOREL A. STAPLEY, M.D.

Secretary

By ROBERT CARPENTER

Executive Secretary

## WOMAN'S AUXILIARY

### INVITATION TO CONVENTION

A special invitation to attend the 30th annual meeting of the Woman's Auxiliary to the Arizona Medical Association is extended to every Arizona physician's wife. We will convene in Scottsdale, May 4 through May 6, 1960, with headquarters at the Safari Hotel.

Mrs. Earl R. Baldwin (Betty), convention chairman, and her committees from Pima County, the hostess auxiliary, are busy with arrangements that will insure us of a relaxed and yet, we hope, an informative meeting.

We are hoping and planning on the largest turnout ever for all of our activities. Won't you please come and be one of those who makes our hopes come true.

Sincerely,

MARY COCHRAN

(Mrs. Hiram D.)

Arizona President

### CONVENTION SCHEDULE

Wednesday, May 4

12 Noon to 4:00 P.M. — Registration — Lobby, Safari Hotel.

3:00 P.M. — Pre-convention Board Meeting — President's Suite, Safari Hotel.

Thursday, May 5

9:00 A.M. to 12:00 Noon — Registration — Lobby, Safari Hotel.

9:00 A.M. to 9:30 A.M. — Nominating Com-

mittee Meeting.

9:30 A.M. to 12 Noon — Student Nurse Loan Fund Committee Meeting.

12:30 P.M. — Luncheon — Safari Hotel.

Friday, May 6

9:00 A.M. to 12 Noon — Registration — Lobby, Safari Hotel.

12:30 P.M. — Luncheon — Paradise Valley Country Club.

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More than a million people were in hospital beds every single day last year.

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## ARIZONA STATE CHIROPODISTS ASSOCIATION

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40 E. Thomas Rd. — CR 9-4161

**Daniel R. Nenard, D.S.C.**

205 E. Camelback Road — AM 5-7510

**Samuel Mason, Pod. D.**

461 W. Catalina Dr. — AM 6-1009

**Howard B. Seyfert, Jr., D.S.C.**

753 E. McDowell Rd. — AL 4-4414

**Irwin D. Shapiro**

40 E. Thomas Rd. — CR 9-4161

### TUCSON

**Felton O. Gamble, D.S.C.**

1888 N. Country Club Rd. — Phone EA 6-3212

**Harold E. Mitton, D.S.C.**

318 E. Congress St. — Phone MA 3-9151

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1. Spoor, H. J.: N. Y. State J. Med. Oct. 15, 1958

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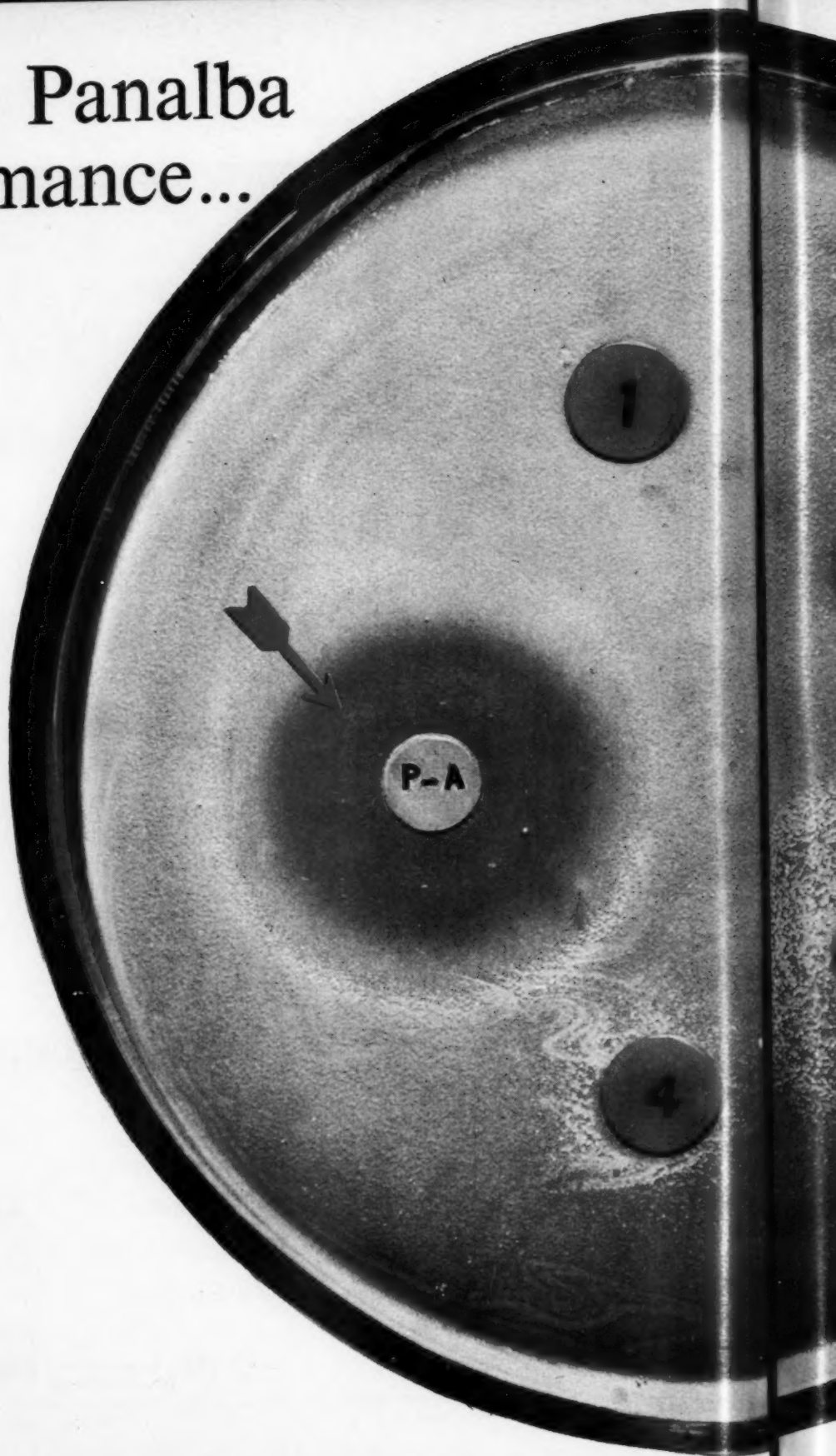


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## *Topics of Current Medical Interest*

### **ABSTRACTS FROM THE THIRD REPORT CONCERNING ARIZONA'S PARTICIPATION IN THE W.I.C.H.E. PROGRAM FOR MEDICAL, DENTAL AND VETERINARY EDUCATION**

The following abstracts from the third W.I.C.H.E. (Western Interstate Commission for Higher Education) report to the Governor of Arizona and Board of Regents of the Universities and State College of Arizona are reproduced for the interest of our readers. The full report is forty-two pages in length, containing many tables analyzing details of this program.

The initial report on the Student Exchange Program (dated August 1, 1957) reviewed the history of the Western Interstate Commission for Higher Education (W.I.C.H.E.) and Arizona's participation in this Commission. The second report (dated August 1, 1958) brought the events reported in the previous report up to that date. Between the two, development of the Arizona Student Exchange Program has been adequately outlined and the operation of the Program thoroughly reviewed.

The present report will confine itself to a review of the year 1958-59 and to bringing the previous reports up to the date of August 1, 1959. Generally speaking, the organization of the present report will follow the plan of the previous ones.

#### **1958-59 CLASSIFICATION OF ALL STUDENTS SERVED BY THE STUDENT EXCHANGE PROGRAM SINCE ITS INCEPTION**

	<i>Fmen</i>	<i>Soph</i>	<i>Junior</i>	<i>Senior</i>	<i>Gradtd</i>	<i>Dropout</i>	<i>Total</i>
Medicine	10	10	7	5	10	3	45
Dentistry	5	3	4	0	3	1	16
Veterinary	8	5	5	7	12*	3**	40
Total	23	18	16	12	25	7	101

\*Only 11 had graduated in veterinary when the year started but an additional student graduated at midyear to bring the total to 12.

\*\*One of these dropped out for this year only and returns to the Program for 1959-60.

In the thirteen western states there are nine schools of medicine, six schools of dentistry, and three schools of veterinary medicine. The sixty-nine Arizona Exchange Students included at least one student in each of these eighteen institutions. No other state was represented in all eighteen institutions.

#### **THE ARIZONA PROGRAM**

##### *The Commissioners*

The composition of the Arizona Commission remains unchanged, and the offices held by the several Commissioners remain unchanged. For the past year, D. W. Melick has continued to serve as Chairman of the Arizona Commission, A. A. Raisin as Vice-Chairman and R. A. Harvill as Secretary. Dr. Harvill remained Arizona's member of the Executive Committee of the Interstate Commission and also served as Vice-Chairman of the Interstate Commission, a post to which he was elected at the annual meeting in Boulder, Colorado on August 11, 1958. H. D. Rhodes continued to serve as Executive Secretary to the Arizona Commissioners.

##### *Summary of Current Student Classification and Status*

A total of 101 students have been served for various periods of time under the Student Exchange Program between its inception and the present date. These students (all men so far) were classified as follows during the year.

#### **SUMMARY OF APPROPRIATIONS, EXPENDITURES AND STUDENT PARTICIPATION**

The table below summarizes the annual appropriations for tuition payments in medicine, dentistry and veterinary medicine from the initial year of the Arizona Student Exchange



Program to date. A rather substantial increase of appropriations for 1959-60 over those for the previous year reflects the judgment of the Commissioners that applications for participation in the Program will continue to be received in increasing numbers, at least in the fields of medi-

cine and dentistry. The appropriations provided for next year are certainly adequate to accommodate the increase and present indications are that they will be more than adequate. Unused appropriations are, of course, returned to the general fund.

TABLE I  
TUITION APPROPRIATIONS FROM 1953 TO 1960

Year	Medical	Dental	Veterinary	Total
1953-54	37,500	9,600	6,000	53,100
1954-55	24,000	12,800	15,600	52,400
1955-56	40,000	16,000	26,400	82,400
1956-57	46,000	14,400	33,600	94,000
1957-58	70,000	19,200	32,400	121,600
1958-59	70,000	19,200	32,400	121,600
1959-60	100,000	48,000	42,000	190,000

In contrast to the appropriations, the actual expenditures for these years have been as follows:

TABLE II  
TUITION EXPENDITURES FROM 1953 TO 1960

Year	Medical	Dental	Veterinary	Total
1953-54	4,000.00	3,200.00	6,000.00	13,200.00
1954-55	19,333.33	4,800.00	13,200.00	37,333.33
1955-56	24,000.00	6,400.00	22,800.00	53,200.00
1956-57	41,333.33	11,200.00	28,800.00	81,333.33
1957-58	51,333.33	6,400.00	31,200.00	88,933.33
1958-59	63,000.00	19,200.00	30,000.00	112,200.00
1959-60*	80,000.00	36,800.00	24,000.00	140,800.00
TOTAL	282,999.99	88,000.00	156,000.00	526,999.99

\*Based on certification and commitments by professional schools. Actual payment is not made until October or later and the figures may be modified by student withdrawal or late admission.

In terms of students, the amounts shown above have provided for the following:

TABLE III  
STUDENTS PROVIDED FOR BY APPROPRIATION FROM 1953 TO 1960

Year	Medical	Dental	Veterinary	Total
1953-54	50	8	6	29
1954-55	12	8	13	33
1955-56	20	10	22	52
1956-57	23	9	28	60
1957-58	35	12	27	74
1958-59	35	12	27	74
1959-60	50	30	35	115

Generally speaking, student demand has fallen short of the opportunity provided, except in the case of veterinary medicine. Each year, the legislature has provided more than sufficient funds to accommodate all qualified students who applied for participation with the single exception of Dentistry in 1958-59. Two qualified dental students could not be accounted for this

year. This was a result of the belated decision of the University of Southern California to take part in the Student Exchange Program after having not done so the previous five years. Ample funds, however, are available to accommodate these additional students during 1959-60 and subsequent years. Actual participation in terms of students is summarized in the following table:

TABLE IV  
STUDENT PARTICIPATION IN THE EXCHANGE PROGRAM  
FROM 1953 TO 1960

Year	Medical	Dental	Veterinary	Total
1953-54	2	2	5	9
1954-55	10	3	11	24
1955-56	12	4	19	35
1956-57	21	7	24	52
1957-58	26	4	26	56
1958-59	32	12	25	69
1959-60*	40	23	20	83

\*Based on certifications and commitments by professional schools. Late admissions and student withdrawals may modify these figures.

#### THE STUDENT EXCHANGE PROGRAM FOR 1959-60

Although the academic year 1959-60 has not yet begun, a reasonably clear picture of the Student Exchange Program can be obtained from the list of certified applicants and the commitments of the several WICHE schools.

Nineteen new medical students will enter the program, all as freshmen. Since five graduated, one left the program to do a year's research prior to continuing his formal medical training, one withdrew from school for financial reasons, three withdrew from the program (but not from school) for personal reasons, and one withdrew following failure, there will be a net increase of eight in the medical program. Student participation in dentistry will almost double (from 12 to 23) with a net increase of 11. This results from the entry of 11 new students (ten freshmen and a sophomore). New students in veterinary medicine dropped materially to two, the smallest number of new veterinary students

since the program started. Since seven seniors graduated and one withdrew temporarily to repeat a portion of his freshman year prior to continuing, while another returned to the program after a year's absence to make up deficiencies, 1959-60 will see a decrease of five in veterinary over the previous year. The grand total of 83 students represents a net increase of 14 over the total for last year.

Of the 83 students who will participate in 1959-60, 32 will be new (31 freshmen and a sophomore) while 50 will be carried over from the previous year. One will return to the program after an absence of one year.

The number of graduates at the end of the year will increase to 14 (12 last year).

Summary sheets for 1959-60 follow on the next three pages. It must be kept in mind that accurate participation data will not be available until the year is essentially over. Although there may be little change from the picture presented here, minor changes may be introduced by late acceptance or last minute withdrawals.

TABLE XV  
ANNUAL OPERATIONS SUMMARY  
ACADEMIC YEAR 1959-60  
Seventh Year of Program

	Medicine	Dentistry	Veterinary	Total
Students provided for by legislative appropriation	50	30	35	115
Student participation by class:				
Total	20	10	2	32
Sophomore	6	6	7	19
Junior	9	3	6	18
Senior	5	4	5	14
Number of students under the program Freshman	40	23	20	83
Number of students increase over last year	8	11	-5	14
Number of students who will graduate this year	5	4	5	14

\*Tentative summary projected on the basis of certified applicants and commitments of the several professional schools. Although little change may occur, there will probably be some adjustment of this data.

## DETAIL OF STUDENT PARTICIPATION FOR THE YEAR 1959-60

<i>Name</i>	<i>Profession</i>	<i>School</i>	<i>Year In School</i>	<i>Year In Program</i>
Bailey, Lawrence M.	Medicine	Colorado	3	3
Barnes, Billy W.	Medicine	USC*	1	1
Bateman, Harold J.	Medicine	Utah	2	2
Belsher, Leslie J.	Medicine	Stanford	2	2
Boyle, Robert S.	Medicine	Utah	1	1
Bruner, John A.	Medicine	Stanford	3	3
Citron, B. Philip	Medicine	USC*	1	2
Clement, Michael S.	Medicine	Utah	1	1
Coles, James H.	Medicine	Colorado	1	1
Cracchiola, Andrea	Medicine	Colorado	1	1
Frauenfelder, Dirk	Medicine	USC*	1	1
Geniec, Paul	Medicine	Utah	1	1
Gillespie, William M.	Medicine	Colorado	3	3
Hilding, Ronald F.	Medicine	Utah	1	1
Hughes, Ray D.	Medicine	Colorado	1	1
James, Edwin C.	Medicine	Oregon	2	2
Jarvis, John H.	Medicine	UCLA**	2	2
Jenkins, Charles M.	Medicine	CME***	1	1
Kimball, John T. Jr.	Medicine	Colorado	4	4
Koenig, Kenneth L.	Medicine	Colorado	1	1
LaBelle, James W.	Medicine	Colorado	3	3
Morgan, Joseph T. Jr.	Medicine	Colorado	4	4
Mundall, Stanley L.	Medicine	CME***	3	3
Nichols, Andrew W.	Medicine	Stanford	1	1
Orozco, John N.	Medicine	UCLA**	1	1
Pennington, John W.	Medicine	Colorado	3	3
Pomeroy, Kent L.	Medicine	Utah	2	2
Roberts, Howard L. Jr.	Medicine	Utah	3	3
Ross, Thomas H.	Medicine	Utah	4	4
Ryerson, Sterling J.	Medicine	CME***	3	3
Salvatierra, Oscar Jr.	Medicine	USC*	3	2
Schorr, Wagner J. Jr.	Medicine	Colorado	1	1
Scott, Vernon R.	Medicine	Colorado	1	1
Shill, Otto S. Jr.	Medicine	Utah	1	1
Shill, Talmage W.	Medicine	Utah	4	4
Spitalny, Lawrence A.	Medicine	Colorado	4	4
Sutton, Phon D.	Medicine	Stanford	1	1
Westervelt, Mark J.	Medicine	California	2	2
Witte, Wendell C.	Medicine	Colorado	1	1
Young, George T.	Medicine	USC*	1	1

\* University of Southern California.

\*\* University of California at Los Angeles.

\*\*\* College of Medical Evangelists.

## DETAIL OF STUDENT PARTICIPATION FOR THE YEAR 1959-60

<i>Name</i>	<i>Profession</i>	<i>School</i>	<i>Year In School</i>	<i>Year In Program</i>
Bradshaw, John F.	Dentistry	USC*	1	1
Coffman, Harold S.	Dentistry	California	3	2
Darby, Robert L.	Dentistry	CME**	3	3
Eddlemon, Vernon S.	Dentistry	CME**	4	4
Edwards, Marvin	Dentistry	Oregon	4	4

Gagnier, Arthur L. Jr.	Dentistry	P&S***	2	2
Greer, Harvey L.	Dentistry	USC**	2	1
Haacke, Stanley A.	Dentistry	USC*	1	1
Hansen, Doyle L.	Dentistry	P&S***	4	4
Hansen, Gordon S.	Dentistry	USC*	1	1
Heller, Robert M.	Dentistry	Oregon	1	1
Hicks, Paul H.	Dentistry	USC*	1	1
Hicks, Taylor T. Jr.	Dentistry	USC*	2	2
Mullins, Karl D.	Dentistry	Oregon	1	1
Nellis, David L. R.	Dentistry	CME**	1	1
Palmer, Donald K.	Dentistry	CME**	3	2
Peterson, Howard W.	Dentistry	Oregon	1	1
Richardson, Robert K.	Dentistry	California	4	2
Sayre, Ernest J.	Dentistry	California	1	1
Siroky, Charles L.	Dentistry	USC*	2	2
Warren, Emmett J.	Dentistry	Washington	2	2
Wheeler, Larry F.	Dentistry	P&S***	1	1
Wong, James J.	Dentistry	P&S***	2	2

\* University of Southern California.  
 \*\* College of Medical Evangelists.  
 \*\*\* College of Physicians and Surgeons.

#### DETAIL OF STUDENT PARTICIPATION FOR THE YEAR 1959-60

Name	Profession	School	Year In School	Year In Program
Armer, Frank C. Jr.	Veterinary	Colo. State	4	4
Beaubien, K. Gale	Veterinary	Colo. State	4	4
Clark, Maynard R.	Veterinary	Colo. State	3	3
Corley, Sterling C.	Veterinary	Colo. State	1	1
Eads, Alan D.	Veterinary	Colo. State	3	3
Ford, Donald R.	Veterinary	Colo. State	2	2
Gregory, John H.	Veterinary	Colo. State	3	3
Gross, David R.	Veterinary	Colo. State	4	4
Kelly, Thomas E.	Veterinary	WCS*	3	3
Land, Leo L.	Veterinary	Colo. State	2	2
Maul, Lawrence P.	Veterinary	Colo. State	2	2
Miller, George F. Jr.	Veterinary	California	2	2
Newman, Terrance C.	Veterinary	WSC*	2	2
Quist, William J.	Veterinary	Colo. State	1	1
Rezzonico, Richard A.	Veterinary	Colo. State	4	4
Schorr, Richard T.	Veterinary	Colo. State	2	2
Smith, Lot D.	Veterinary	Colo. State	3	3
Sparks, John M.	Veterinary	Colo. State	2	2
Wiggins, Roger N.	Veterinary	Colo. State	3	3
Ziegler, Louis L.	Veterinary	Colo. State	4	4

\* Washington State College.

#### DISCUSSION

The recent (1958) amendments to the law under which the Student Exchange Program operates were discussed in the report of August 1, 1958. The experience of the year 1958-59 has corroborated the opinion expressed previously that these changes have strengthened the program and made it more attractive. Larger and larger numbers of students are availing them-

selves of the program and indications are that this increased participation will continue.

The educational bargain available to the state is even greater for next year than it was in the year just past. For an expenditure of \$140,800, the legislature is providing the finest educational facilities in the West to a total of 83 Arizona students of medicine, dentistry, and veterinary medicine. To provide similar facili-



ties through state supported professional schools in these fields would require many millions of dollars, even at a rock-bottom minimum.

### TOXICITY OF ANTIFREEZE

In view of the subfreezing temperature which prevails in various parts of Arizona, it appears timely to acquaint physicians in our state with the toxicological hazards of antifreeze preparations commonly employed in automobile radiators. The so-called "permanent" antifreeze usually contains 90-100% ethylene glycol, a dye, and a rust inhibitor. (1) Ethylene glycol is the major toxic ingredient in this type of preparation. Another type of antifreeze ("non-permanent") usually contains methyl alcohol, a dye, and a rust inhibitor. (1) Methyl alcohol constitutes the major toxic ingredient in the latter type of antifreeze.

The oral lethal dose of ethylene glycol for adults appears to lie between 3 and 4 ounces. (1, 2, 3, 4, 5, 6, 7) Following the ingestion of ethylene glycol, there is an initial transient period of exhilaration followed by the development of ataxia, stupor, and coma, with or without an intermediary stage of convulsions. There may be nausea, vomiting (sometimes hematemesis), and abdominal cramps. The respiration may be noisy and shallow and slow or rapid. The effect of ethylene glycol on the kidneys results in acute renal failure with oliguria or anuria, uremia, hematuria, electrolyte changes, acidosis, peripheral edema, ascites, and pulmonary edema. Death may occur as the result of respiratory paralysis or as the result of renal failure, usually the latter.

Treatment for ethylene glycol poisoning is mainly symptomatic. The ingested poison should be promptly evacuated from the stomach by induced emesis or gastric lavage with a 1:5,000 potassium permanganate solution. The respiration should be supported by the administration of oxygen and artificial respiration. The administration of fluid and electrolytes should be limited to replacement of the amount lost in the urine, perspiration, vomiting, etc. Use of the artificial kidney should be considered for the management of renal failure, hyperpotassemia or intractable acidosis. The seriousness of poisoning from the ingestion of "permanent" antifreeze was recently emphasized by Haggerty. (7) This physician reported an incidence in which a group of youths mistakenly consumed some "permanent" antifreeze which was stored in a whiskey

bottle. The next morning a 16-year-old boy and a 17-year-old girl were hospitalized and treated for acute renal failure with the artificial kidney. Unfortunately, the girl died in severe, uncontrollable metabolic acidosis after treatment and the boy died later of irreversible renal damage.

The oral lethal dose of methyl alcohol in man lies between 2 and 8 ounces. (8) The well-known symptomatology and treatment of methyl alcohol poisoning may be found in various textbooks of pharmacology and toxicology. (3, 8, 9) Poisoning due to this alcohol results from a combination of factors, consisting of (1) a minor component of central nervous system depression, (2) a major component of acidosis due to formic acid, and (3) a specific toxicity of the metabolic products of methyl alcohol (probably formic acid) for the retinal cells. An asymptomatic latent period of 8 to 36 hours may precede the onset of symptoms. Survival and salvage of vision is directly dependent on rapid and complete restoration of acid-base balance. Acidosis should be treated with alkalis, administered in amounts and by routes determined by the severity and progress of the case. Since the oxidation of methyl alcohol is slow, there is a likelihood of recurrence of acidosis after a period of successful treatment. Hence it is recommended that close observation and proper therapy should be continued for several days. As an adjunct, whiskey (or 50% ethanol in water), 1 ounce every 3 or 4 hours, may be given by mouth or stomach tube to retard oxidation of the methyl alcohol. The combined use of alkali and whiskey in the successful treatment of 26 navy men who ingested pure methyl alcohol, varying between 3 and 8 ounces, has been reported by Chew and associates. (11)

### CHRONIC CARBON MONOXIDE POISONING

Although the acute form of carbon monoxide poisoning is well recognized, the chronic form of carbon monoxide poisoning has not been fully appreciated. It has been suggested that chronic carbon monoxide intoxication, if such occurs, is the result of repeated acute exposures and that a chronic illness develops from the cumulative effects of repeated tissue injury due to intermittent exposure to the gas. (11) However, Gilbert and Glaser recently cited a case of carbon monoxide poisoning and pointed out the possibility that chronic poisoning by this gas represents a true chronic intoxication rather

than one of repeated acute insults.(12)

The case history reported by Gilbert and Glaser(12) involved a policeman, who had spells of dizziness, somnolence, and unconsciousness while directing heavy traffic. In addition the patient had undergone marked personality changes and had become highly nervous and irritable. He also experienced an increase in fatigability, tremor, and sweating. General physical and neurologic examinations revealed no abnormal findings except for mental dullness, general hyperactivity and impaired concentration. The patient was hospitalized and his condition improved. He was discharged with a diagnosis of psychomotor seizures and cerebral atrophy and was placed on antiepileptic medication. A few months later, after he had returned to work, his condition worsened. He had obtained a transfer and worked in the police garage where automobile motors were frequently left running while the radios were adjusted. During the second examination a detailed occupational history was obtained and a blood sample, taken 30 hours after the final exposure to working environment, was examined for carbon monoxide. The specimen was found to be 20% saturated with carbon monoxide. The anticonvulsant medication was discontinued and within a week of hospitalization, the patient's condition improved; his personality and behavior became normal. After discharge the patient continued to be asymptomatic, except for one week-end when he experienced transient episodes of staggering, confusion, and irritability. These at-

tacks were associated with the operation of a farm tractor, which required the patient to walk behind the machine. The patient stopped working with his tractor and has remained essentially symptom-free.

This case report serves to emphasize the difficulty which may be encountered in the diagnosis of chronic carbon monoxide intoxication. It is suggested that the occupational or environmental history be carefully considered in cases which involve symptoms such as intermittent unconsciousness, anorexia, nausea, weight loss, apathy, fatigability, headache, dizziness, insomnia, and personality changes. Cases of suspected carbon monoxide poisoning may readily be confirmed by a blood test, made shortly after exposure to the offending environment.

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#### STATISTICS OF 98 POISONING CASES IN ARIZONA DURING DECEMBER, 1959

AGE:	73.5% involved under 5 year age group	(72)
	1.0% involved 6 to 15 year age group	( 1 )
	9.2% involved 16 to 30 year age group	( 9 )
	8.2% involved 31 to 45 year age group	( 8 )
	2.0% involved over 45 year age group	( 2 )
NATURE OF INCIDENT:	6.1% were not reported	( 6 )
	87.8% accidental	(86)
	12.2% intentional	(12)
TIME OF DAY:	39.8% occurred between 6 a.m. and noon	(39)
	37.8% occurred between noon and 6 p.m.	(37)
	13.3% occurred between 6 p.m. and midnight	(13)
	1.0% occurred between midnight and 6 a.m.	( 1 )
	8.2% were not reported	( 8 )
OUTCOME:	98.0% recovery	(96)
	2.0% fatal	( 2 )
	(1 case aspirin poisoning, 1 case silver nitrate and mercuric iodide poisoning)	

## CAUSATIVE AGENTS:

*Internal Medicines*

	Number	Percent
Aspirin	28	38.8
Other Anaglesics	5	5.1
Barbiturates	6	6.1
Antihistamines	0	0.0
Laxatives	1	1.0
Cough Medicine	2	2.0
Tranquilizers	3	3.1
Others	14	14.3

Subtotal	69	70.4
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*External Medicines*

Liniment	0	0.0
Antiseptics	0	0.0
Others	0	0.0

Subtotal	0	0.0
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*Household Preparations*

Soaps, Detergents, etc.	0	0.0
Disinfectants	1	1.0
Bleach	2	2.0
Lye, corrosives, drain cleaners	1	1.0
Furniture and floor polish	1	1.0

Subtotal	5	5.0
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*Petroleum Distillates*

Kerosene	2	2.0
Gasoline	1	1.0
Others	0	0.0

Subtotal	3	3.0
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*Cosmetics*

2	2.0
---	-----

*Pesticides*

Insecticides	5	5.1
Rodenticides	0	0.0
Others		

Subtotal	5	5.1
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*Paints, Varnishes, Solvents, etc.*

1	7.2
---	-----

2	2.0
---	-----

1	1.0
---	-----

4	4.1
---	-----

TOTAL	98	100.0
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WILLIS R. BREWER, Ph.D  
Dean, College of Pharmacy  
The University of Arizona, Tucson  
ALBERT L. PICCHIONI, Ph.D.  
Pharmacologist and Director

Arizona Poisoning Control Program  
The University of Arizona, Tucson  
LINCOLN CHIN, Ph.D.  
Pharmacologist  
The University of Arizona, Tucson

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## *Future Medical Meetings and Postgraduate Education*

### **ARIZONA MEDICAL ASSOCIATION, INC.**

**SCOTTSDALE****MAY 4, 5, 6, 7, 1960**

#### 69TH ANNUAL MEETING PROGRAM THE ARIZONA MEDICAL ASSOCIATION, INC. May 4, 5, 6, and 7, 1960

*The Safari Hotel, Scottsdale, Arizona*

Following is the program submitted to us February 10th.

Obviously the program is incomplete; alterations and additions will be made.

#### WEDNESDAY, May 4th

8:00 A.M.	Board of Directors Meeting	The Kudu Room
12:00 Noon	Board of Directors Luncheon	The Garden Room
2:00 P.M.	House of Delegates, First Meeting	Convention Hall
4:00 P.M.	Reference Committee Meetings	Conference Room
6:30 P.M.	Reception	Pool Patio
7:30 P.M.	Chuckwagon Dinner	Pool Patio

#### THURSDAY, May 5th

8:00 A.M.	Breakfast Seminar, "Whiplash Injuries." Chairman: John R. Schwartzmann, M.D. Panel: John Eisenbeiss, M.D., Mr. Robert Miller, Edwin R. Schottstaedt, M.D., Louis Jolyon West, M.D., Richard E. McGovern, M.D.	Main Dining Room
9:30 A.M.	Intermission	Visit the Exhibit Tent
10:00 A.M.	Speaker: Harry Schwachman, M.D., Boston Title: Staphylococcal Infections in Childhood.	Convention Hall
10:30 A.M.	OPENING EXERCISES Invocation: Dean George E. Selway Welcome: W. Albert Brewer, M.D., President, Maricopa County Medical Society. Response: To be announced Memorial Service: Dean George E. Selway Presentation of the President: Dermont W. Melick, M.D., Past-President Presidential Address: Lindsay E. Beaton, M.D. Presentation of the Honorable Paul Fannin, Governor of the State of Arizona: Lindsay E. Beaton, M.D.	Convention Hall
11:00 A.M.	Speaker: Kenneth K. Keown, M.D., Columbia, Mo. Title: Regional Anesthesia Combined with Intramuscular Sodium Pentothal for the Pediatric Orthopedic Patient.	Convention Hall  Visit the Exhibit Tent Convention Hall
11:30 A.M.	Intermission	
11:45 A.M.	Speaker: Orval R. Withers, M.D., Kansas City, Mo. Title: To be announced	
12:15 A.M.	Speaker: Edwin R. Schottstaedt, M.D., San Francisco Title: To be announced	Convention Hall

12:45 P. M.	Intermission	Visit the Exhibit Tent
1:00 P. M.	SPECIALTY SOCIETY LUNCHEONS — <i>Open to all registrants.</i>	
	Arizona Chapter of the American College of Chest Physicians.	Convention Hall
	Speaker: Corrin H. Hodgson, M.D., Rochester, Minn.	
	Title: Hereditary Hemorrhagic Telangiectasia and Pulmonary Arteriovenous Fistula.	
	Speaker: Dwight C. McGoon, Rochester, Minn.	
	Title: Recent Developements in Open Heart Surgery.	
	Arizona Pediatric Society	Garden Room
	Speaker: Harry Shwachman, M.D., Boston	
	Title: The Problem of Malnutrition in Children	
	Arizona Chapter, Western Orthopedic Association	Kudu Room
	Speaker: Edwin R. Schottstaedt, M.D., San Francisco	
	Title: To be announced	
2:30 P. M.	Intermission	Visit the Exhibit Tent
3:00 P. M.	Blue Shield Annual Corporation Meeting	Convention Hall
4:30 P. M.	Reference Committee Meetings (on call)	Conference Room
7:30 P. M.	SPECIALTY SOCIETY BANQUETS — <i>Open to all registrants.</i>	
	Arizona Academy of General Practice	
	Speaker: Louis Jolyon West, M.D., Oklahoma, City	
	Arizona Society of Anesthesiologists	
	Speaker: Kenneth K. Keown, M.D., Columbia, Mo.	
	FRIDAY, May 6th	
8:00 A. M.	Breakfast Seminar: Hyposis in Surgery and Obstetrics	Main Dining Room
	Chairman: Louis Jolyon West, M.D., Oklahoma City	
	Panel: Max Costin, M.D., Kenneth K. Keown, M.D., William J. Dignam, M.D., Dwight C. McGoon, M.D., Edwin R. Schottstaedt, M.D.	
9:00 A. M.	Intermission	Visit the Exhibit Tent
9:30 A. M.	Speaker: Col. George H. White, San Francisco	Convention Hall
	Title: Narcotic Addiction from the Point of View of a Law Enforcement Officer	
9:50 A. M.	Response: Otto L. Bendheim, Phoenix	Convention Hall
	Title: Narcotic Addiction, a Medical Problem	
10:10 A. M.	Speaker: Louis J. West, M.D., Oklahoma City	Convention Hall
	Title: To be announced	
10:40 A. M.	Speaker: Carlo Henze, M.D., Hanover, N.J.	Convention Hall
	Title: Recent Progress in Psychopharmacology	
11:10 A. M.	Intermission	Visit the Exhibit Tent
11:25 A. M.	Association's First Prize Award Paper	Convention Hall
11:45 A. M.	Symposium: Psychiatry in General Practice and the Specialities	Convention Hall
	Chairman: Louis J. West, M.D.	
	Panel: James L. Grobe, M.D., Harry Swachman, M.D., Edwin R. Schottstaedt, M.D., Orval R. Withers, M.D., Corrin H. Hodges, M.D., William J. Dignam, M.D.	
12:45 P. M.	Intermission	Visit the Exhibit Tent
1:00 P. M.	SPECIALTY SOCIETY LUNCHEONS — <i>Open to all Registrants</i>	

	Joint Meeting: Arizona Chapter, American College of Surgeons & Southwestern Obstetrical and Gynecological Society	Convention Hall
	Speaker: William J. Dignam, San Francisco	
	Title: The Usefulness of Culdoscopy in Gynecologic Diagnosis	
	Arizona Society of Allergy	Kudu Room
	Speaker: Orval R. Withers, Kansas City, Mo.	
	Title: To be announced	
	Arizona Society of Pathologists	Garden Room
	Speaker: John B. Alsever, M.D., Phoenix	
	Title: The Problem of Transfusion Hepatitis	
2:30 P.M.	Intermission	Visit the Exhibit Tent
3:00 P.M.	House of Delegates, Second Meeting	Convention Hall
7:00 P.M.	President's Reception	Pool Patio
8:00 P.M.	Dinner Dance	Convention Hall
SATURDAY, May 8th		
9:00 A.M.	Speaker: Kenneth K. Keown, M.D., Columbia, Mo.	Convention Hall
	Title: The Recognition and Treatment of Heart Failure in the Operating Room	
9:30 A.M.	Speaker: Wm. J. Dignam, M.D., San Francisco	Convention Hall
	Title: Indications for Office Gynecologic Procedures of a Surgical Nature	
10:00 A.M.	Speaker: Carlo Henze, M.D.	Convention Hall
	Title: Serotonin and the Carcinoid Syndrome	
10:30 A.M.	Intermission	Visit the Exhibit Tent
10:45 A.M.	Speaker: Corrin H. Hodgson, M.D., Rochester, Minn.	Convention Hall
	Title: The Solitary Circumscribed Pulmonary Nodule	
11:15 A.M.	Speaker: John B. Alsever, M.D., Phoenix	Convention Hall
	Title: Transfusion Therapy in the Emergency Treatment of Secondary Shock	
11:45 A.M.	Speaker: Dwight C. McGoon, M.D., Rochester, Minn.	Convention Hall
	Title: Cardiac Septal Defects	
1:00 P.M.	Annual Handicap Golf Tournament	Scottsdale Country Club
7:00 P.M.	Golfers Banquet — C. Thomas Read, M.D., Golf Committee Chairman, presiding.	Scottsdale Country Club

#### LIST OF GUEST SPEAKERS AND TITLES

John B. Alsever, M.D., Medical Director, Southwest Blood Banks, Phoenix, Arizona.

William J. Dignam, M.D., Assistant Professor of Obstetrics and Gynecology, University of California, at Los Angeles.

Carlo Henze, M.D., Medical Director, Sandoz Pharmaceuticals, Hanover, New Jersey.

Corrin H. Hodgson, M.D., Asst. Professor of Medicine, Mayo Foundation, University of Minnesota.

Kenneth K. Keown, M.D., Professor of Anesthesiology, University of Missouri Medical School.

Dwight C. McGoon, M.D., Chief, Cardiac Surgical Section, Mayo Clinic, Rochester, Minn.

E. R. Schottstaedt, M.D., Associate Clinical Professor of Orthopedic Surgery, Univ. of California

Harry Schwachman, M.D., Associate Clinical Professor of Pediatrics, The Children's Medical Center, Boston, Massachusetts.

Lewis Jolyon West, Professor of Psychiatry, University Medical Center, Oklahoma City, Oklahoma.

Col. George H. White, Director Supervisor, Bureau of Narcotics, San Francisco, California.

Orval R. Withers, M.D., Associate Clinical Professor of Medicine, University of Kansas Medical School.

### THE SOUTHWESTERN SURGICAL CONGRESS TWELFTH ANNUAL MEETING

The Southwestern Surgical Congress is meeting in Las Vegas, March 28, 29, 30 and 31, 1960. The Riviera Hotel will be headquarters.

The scientific program runs throughout the four days of the meeting and embraces five guest speakers presenting papers, as well as the organization. The guest presentations will cover General Surgery, Cancer, Vascular Surgery, Obstetrics-Gynecology and Hand Surgery, and the speakers are:

- Dr. William P. Longmire, Jr.  
University of California Medical Center  
Los Angeles  
Dr. Ian G. MacDonald  
Los Angeles  
Dr. Rutherford S. Gilfillan  
San Francisco  
Dr. Bernard Hanley  
Los Angeles  
Dr. Walter C. Graham  
Santa Barbara, California

Members of the Southwestern Surgical Congress and members of the Armed Forces are not required to pay registration fees. Non-members are welcome but will be required to pay registration fee at the time of the meeting. Members of the Arizona Medical Association are invited.

For the meeting a fairly concentrated scientific program including the guest speakers is planned as well as excellent off-time entertainment.

### AMERICAN COLLEGE OF CHEST PHYSICIANS

The Council on Postgraduate Medical Education of the American College of Chest Physicians will present the 13th Annual Postgraduate Course on Diseases of the Chest at the Sheraton Hotel, Philadelphia, March 14-18, 1960.

The most recent advances in the diagnosis and treatment of heart and lung diseases, medical and surgical aspects, will be presented.

### ARIZONA TUBERCULOSIS AND HEALTH ASSOCIATION, INC.

APRIL 23 & 24, 1960 (Saturday and Sunday)

The annual meeting of the Arizona TB & Health Association and the Arizona Trudeau Society, its medical section, is scheduled for April 23 & 24 at the Ramada Inn in Phoenix.

### ANNOUNCEMENT 1960 ANNUAL MEETING

American Academy of General Practice Category I credit, 12 hours, 1960 annual meeting, Scottsdale.

Furesz and Scotti reported clinical results in twenty-seven patients treated with intramuscular rifomycin B. Most patients became afebrile within twenty-four to seventy-two hours. No side reactions occurred during therapy. The authors concluded that rifomycin B. shows "good promise" in micrococcus and also other types of infections, particularly those of the biliary tract.

(from Seventh Annual Antibiotic Symposium,  
Nov. 4-6, 1959, Washington, D.C.)

### ANTI-GRAM-NEGATIVE ANTIBIOTIC DESCRIBED

McCabe and Jackson, of the University of Illinois College of Medicine, reported results of studies of colistin, a polypeptide substance produced by a soil organism, *Aerobacillus colistinus*. Its spectrum is said to be predominantly against gram-negative bacteria. In-vitro studies show inhibition of most strains of pathogenic *Escherichia coli* and many strains of *pseudomonas* and *aerobacter*.

Colistin was administered intramuscularly to patients with chronic urinary tract infections, septicemia, endocarditis, and wound infections due to gram-negative bacteria. Observations made three months after treatment of chronic urinary tract infections showed that bacteriologic cure was obtained in more than 50 percent of patients. All patients with *pseudomonas* wound infections showed good results. Only three of seven patients with gram-negative septicemia were cured or improved. Some toxic effects were exhibited by thirteen patients. Most common were paresthesias, which were severe in two patients.

(from Seventh Annual Antibiotic Symposium,  
Nov. 4-6, 1959, Washington, D.C.)

Frightened patients when they want a cure,  
Bid any price and any pain endure;  
But when the Doctor's remedies appear  
The cure's too easy and the price too dear.  
Daniel Defoe in "The True-Born Englishman"  
(1701)